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# **Evaluating How Information and Communication Technology (ICT) Interventions Affect the Wellbeing of Indigenous Communities in the North Rupununi, Guyana**

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This thesis is submitted in fulfilment of the requirements for the research degree of PhD in  
Information and Communication Technologies for Development (ICT4D)

Department of Engineering and Innovation

The Open University

Milton Keynes, UK

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# Abstract

Having its roots in computer science and information systems, the field of information and communication technologies (ICT) in development has arguably been dominated by technocentric approaches, mainly concerned with describing and managing the mechanisms of technology diffusion and adoption. However, the high failure rate of many ICT for development (ICT4D) interventions and their limited focus on wellbeing impact has drawn attention to the needs for designing better evaluation frameworks to help make sense of the complex realities in which ICT interventions take place, and for interrogating the usefulness of mainstream approaches on the impact of ICT4D interventions on wellbeing. Efforts to operationalise the capability approach, and to apply it to the field of ICT4D constitute an increasingly popular alternative in this regard. The alternative shifts the focus of ICT4D evaluation away from an exclusive focus on technology access and use, towards understanding their multidimensional development outcomes, including their impact on wellbeing. One avenue, which has largely been underexplored, is the potential contribution of systems thinking approaches for further strengthening the focus on multidimensional development outcomes while improving the practical applicability of ICT4D evaluations. This doctoral research sets out to explore how systems thinking concepts and techniques can be used to complement existing approaches so as to increase the success rate of ICT4D interventions, as measured by their effect on the wellbeing of intended beneficiaries. Drawing on multiple theoretical influences, including the capability approach, systemic inquiry, critical theory and pragmatism, this thesis evaluates four ICT4D interventions, including a researcher-led ICT4D intervention, which have all taken place in Indigenous



communities of the North Rupununi, Guyana, between 2005 and 2015. The findings of this study suggest that the wellbeing impact of ICT4D interventions is primarily determined by whether they are introduced to address locally-defined needs and the extent to which beneficiary communities are involved in their design, implementation and evaluation. It argues that applying concepts and techniques from systems thinking can help address some of the criticism and shortcomings of established and emerging approaches for evaluating ICT4D interventions, by looking beyond efficiency and optimisation towards questions of participation, power, purpose and values. The research then outlines the contours of a Systemic Implementation and Evaluation (SIE) framework, as a way to draw attention to the inevitable clashes of worldviews that characterise interventions involving multiple stakeholders, and to allow a critical reflection on the nature of these interventions and the changes brought about. It concludes by producing a series of policy recommendations associated with enhancing the impact of ICT4D interventions on Indigenous wellbeing.

## Declaration and Copyrights

I certify that this thesis, which I have presented for examination for the research degree of PhD in Information and Communication Technologies for Development (ICT4D) of the Open University, is solely my own work, other than where I have clearly indicated that it is the work of others.

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# Abbreviations and Glossary

AFC	Alliance for Change
APNU	A Partnership for National Unity
AR	Action research
GINA	Government Information Agency
ICT	Information and communication technology
ICT4D	Information and communication technology for development
ILO	International Labour Organization
IS	Information Systems
ISP	Internet service provider
IT	Information technology
KCI	Knowledge-constitutive interest
LCDS	Low Carbon Development Strategy
MoAA	Ministry of Amerindian Affairs
MSSC	Multi-Stakeholder Steering Committee
NDS	National Development Strategy
OLPF	One Laptop Per Family
PAR	Participatory Action Research
PES	Payment for Ecosystems Services
PPP/C	People's Progressive Party and Civic
PRSP	Poverty Reduction Strategy Paper
PMO	Project Management Office (of the OLPF)
REDD+	Reducing emissions from deforestation and forest degradation

SIE	Systemic Implementation and Evaluation Framework
SLF	Sustainable Livelihoods Framework
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNFCCC	United Nations Framework Conference on Climate Change

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## Foreword



**Figure 1 - Me trying to access the mobile phone network...**

...On one of the few *hotspots* in the community of Surama, North Rupununi, Guyana (March 2014). The hotspot consists in a small mound on top of which a wooden platform is erected for people to put their phone while waiting for it to pick up the mobile network signal.

# Chapter 1. Introduction

## 1.1 ICT, Guyana and Indigenous Communities

### **1.1.1 Introduction**

As he opened the annual Amerindian Heritage Month, in September 2010, the President of Guyana Bharrat Jagdeo addressed an audience of Amerindian<sup>1</sup> peoples and journalists gathered at the National Exhibition Centre, in Georgetown, and presented his vision for the development of the country's hinterland. The timing and location of this announcement was strategic. Amerindian Heritage Month is an official observance organised since 1995 to commemorate the first time an Amerindian was elected to the Parliament of Guyana, in September 1957. On this occasion, multiple events are held throughout the country to celebrate Amerindian identity and culture. For the Government of Guyana, Amerindian Heritage Month also provides a major opportunity for making policy announcements that concern Amerindian peoples. It is in this setting that President Jagdeo chose to outline the Government's plan for poverty reduction. This plan featured large scale investments in solar power electricity, the creation of computer banks with internet access in every Amerindian village, as well as the provision of 90,000 laptops to Guyana's poorest families as part of a nation-wide effort to ensure that the poorest people of Guyana were not lagging behind in access to information and communication technology (ICT) and related services (Caribbean 360 2010).

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<sup>1</sup> The word Amerindian is obtained by contraction of the two words *American* and *Indian*. It is used to refer to the pre-Colombian, native peoples of the Americas.



The President's announcement during Amerindian Heritage Month intervened in a context of relatively limited technology penetration and higher poverty incidence in the hinterland, in comparison with the country's more urbanised coastland areas. Whereas coastland areas had access to a broadband service (Gilardie 2010b), the majority of communities in the hinterland were still lacking reliable electricity sources. For them, access to ICT was usually limited to short range, High Frequency (HF) radios, which were suitable for local communication only. Some villages did have satellite-based internet access; however the lack of telecommunication infrastructure meant that most communities were unable to afford the high prices asked by internet service providers. Several factors explain the discrepancy in ICT access between coastland and hinterland areas. Home to a majority of the country's Amerindian populations, the hinterland is also the country's least populated area and one where incomes are the lowest as well. Installing infrastructure in these remote landscapes of forests, savannas, rivers and wetlands presents a technical challenge as well as a cost that private telecommunication operators alone did not appear to be willing to address. However, in Guyana the question of the role of ICT interventions in poverty reduction cannot be reduced to technical and economic aspects. Indeed, at the heart of the relationship between coastal and hinterland areas lie questions of access to development, wellbeing, human rights and social justice, as well as political and geopolitical concerns. These questions are notably influenced by ethnic, geographical and historical factors, which find their roots in the colonial period that shaped the foundations of contemporary Guyana.

### **1.1.2 Structure**

As a general introduction to this doctoral thesis, this chapter begins by setting the scene of this research. Section 1.2 briefly introduces the context of Guyana and the hinterland region of the North Rupununi, looking in particular at the heritage of colonisation and the evolution of the relationship between Indigenous Amerindians and the state of Guyana over time. It then moves to describe the growing role of ICT in the development discourse of Guyana over the past 15 years. Section 1.3 takes a step back to introduce the international context of intervention. It highlights the growing gap between the discourse on Indigenous rights and the reality lived by many Indigenous peoples on the ground, and tries to draw some initial observations on the role of ICT in this context. The chapter then presents the research aims and objectives as well as the overall structure of this thesis. It concludes by presenting my motivations for carrying out this research, and the experiences, aspirations, values, ideas and assumptions that have influenced it, as a way to clarify my own stance in the course of this doctorate research.

## **1.2 National Context of Intervention**

### **1.2.1 Guyana and the North Rupununi**

Guyana, as the only English-speaking country in South America is one of the smallest countries of the continent, with a land area of 215,000 square kilometres, making it slightly smaller than the UK. A 2012 census estimated its population around 747,884 individuals, a majority of which are concentrated on coastal areas (Bureau of Statistics Guyana 2012). However, the country suffers from a high emigration rate of

skilled people and professionals, mainly to the USA, Canada, the Caribbean and the UK. This *brain drain* is causing the overall population to decrease (Bulkan 2013; Griffiths & Anselmo 2010; Mistry et al. 2014). Guyana is one of the poorest countries in the region, with approximately 35% of its population living below the poverty line (CIA 2016). The country ranks at the 124<sup>th</sup> position in the Human Development Index (UNDP 2016), and 119<sup>th</sup> in the 2015 Corruption Perceptions Index (Transparency International 2015). The population is divided between Indo-Guyanese (43.5%) and Afro-Guyanese (30.2%) ethnic groups, with a smaller proportion of mixed ethnic backgrounds (16.7%). The Indigenous Amerindians constitute around 9% of the population (CIA 2016), divided into 9 different ethnic/linguistic groups comprising Arawak, Carib, Wapichan, Makushi, Patamona, Akawaio, Arekuna, Warau and Wai Wai peoples (Box 1).

### **Box 1 - Defining Indigeneity**

UN special reporter José Martínez Cobo (1986) divides the concept of Indigeneity into group-level and individual-level definitions. At the group level, it essentially designates the communities and peoples who have historical connections with the societies preceding colonisation, who developed on areas populated by these peoples, and who consider themselves as separate from other societal structures prevailing in the area. At the individual level, it suggests that these persons must identify themselves as members of an Indigenous people, and be recognised and accepted by the same group as belonging to it.

Just as many individuals of African descent prefer to be defined as 'Black' which is capitalised and thus indicates a distinctive racial and cultural identity, rather than 'black' which simply describes the colour of one's skin, many Indigenous people prefer to be referred to in terms of a distinctive cultural identity by having the term capitalised, rather than a simple descriptor meaning something that naturally exists in a place or country rather than arriving from another place. A non-capitalised descriptor could be easily applied to a plant or animal

species; for example, 'the poison dart frog is indigenous to Central and South America'. In this thesis, I therefore respect the preference of many Indigenous people to be distinguished as having a distinct cultural identity.

The North Rupununi is located in the southwest of Guyana, at the northern end of the Upper Essequibo-Upper Takutu Administrative Region (Figure 2). The area covers 8000 km<sup>2</sup> and features a mosaic of savanna, wetlands and forests, and an intricate network of rivers and creeks. During the rainy season, the North Rupununi becomes a seasonal floodplain, which supports an important biodiversity of terrestrial and aquatic life (Mistry et al. 2004; Mistry et al. 2008; Wetlands Partnership 2008). The North Rupununi is the homeland of the Makushi Indigenous people, who constitute the primary ethnic group in the area. The region also features a minority of Patamona, Arawak, Wapishana and Arekuna people, as well as some non-Indigenous peoples. With approximately 10,000 peoples distributed among 27 communities, the region has a low density of population. The distance separating villages ranges from a few minutes to several hours by foot, truck or boat. Within communities, houses can be spread across several square kilometres.

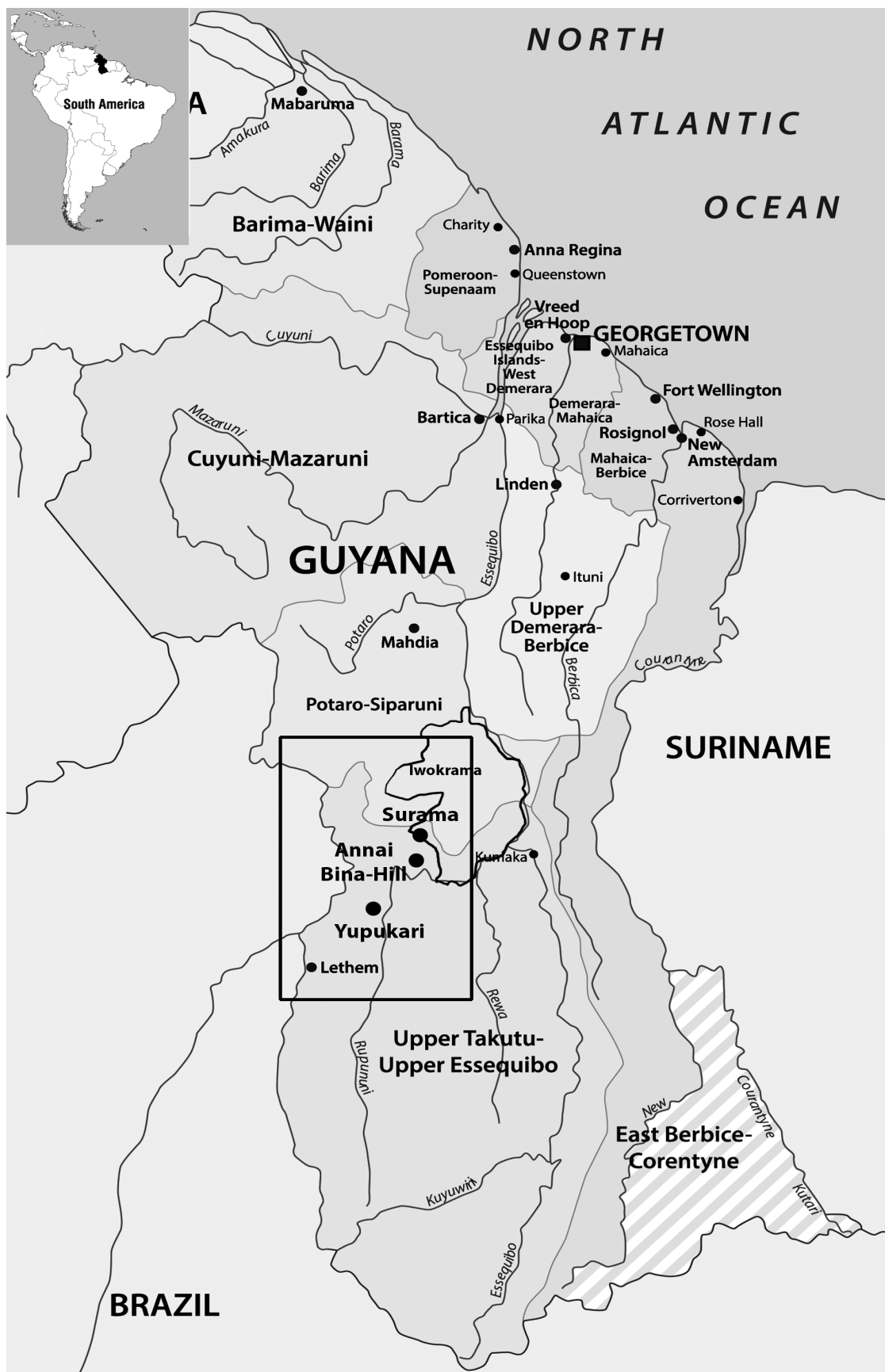


Figure 2 - Map of the North Rupununi Region in Guyana

The primary livelihood activities are subsistence farming and fishing, with some amount of hunting and gathering, trapping, brick making, and cattle ranching. The main local crop is cassava, of which several varieties are grown to produce *farine* (roasted cassava grains), cassava bread, tapioca, and various beverages. In the 19<sup>th</sup> and 20<sup>th</sup> centuries, the region's economy was dependent on cattle ranching and balatá bleeding industries<sup>2</sup>. Whilst these industries have now disappeared, the ranching culture and the cowboy lifestyle are still visible, notably through popular events such as the Rupununi Rodeo which is held every year in the region's main township: Lethem. Today, ecotourism represents the largest cash-generating activity currently taking place in the area, with a number of stakeholders engaged in tourism activities such as bird-watching, river tours, sport fishing, local cultural tours and mountain hikes. Three villages in particular, have managed to establish sustainable models of community tourism including accommodation. These are the villages of Surama, Yupukari and Rewa.

Traditionally, the Makushi built houses adapted to savanna conditions, with palm leaf thatching and solid walls out of wattle and daub or clay bricks to keep out the cool breezes of the dry season. More recently, some community members have begun building homes with zinc sheets for roofs and burnt bricks or manufactured materials for walls, although cost remains an incentive to use traditional materials and methods. At present most households in the North Rupununi have no access to piped water or grid electricity. People use hand dug as well as pump wells to access groundwater. Water is also used from rivers and creeks, and many households with

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<sup>2</sup> Balatá bleeding is an operation that consists in producing natural latex (balatá) by cutting incisions in the trunk of the South American tree *Manilkara bidentata*. This latex was formerly used in the manufacture of golf balls and machine belts.

zinc roofs harvest rainwater. Energy for electricity is sourced by low-power solar panels, some of which are provided by the Government as part of its hinterland electrification programme. For lighting, people also use battery-operated torches, flambo lamps, candles and generators. Many people use mobile phones as weak torches as well. For transportation, many Amerindians still rely on walking and cycling (during the dry season) or the use of a canoe (during the wet season). Access roads to individual villages and to river landings have been cleared and maintained by community members. However, many of these roads become impassable by vehicle during the wet season, when some villages can only be reached by boat.

Two major developments have taken place over the past 20 years, which have significantly influenced the life of local communities in the North Rupununi. One was the construction of a bridge over the Brazil-Guyana frontier river, followed by a road linking the border town of Lethem to Georgetown. These developments made the region significantly more accessible to coastlanders, and transformed it into a corridor for the movement of goods and services between Brazil and Guyana, bringing with it unprecedented threats and opportunities (Allicock 2003). Another development, which coincided with the road, was the establishment, in 1996, of the Iwokrama International Centre for Rainforest Conservation and Development<sup>3</sup>.

Named after the Indigenous name of a mountain, the Iwokrama Centre was established through an agreement between Guyana and the Commonwealth Secretariat to promote the conservation and the sustainable and equitable use of tropical rainforests (Iwokrama International Centre for Rainforest Conservation and Development 2015). The Centre triggered investments in biodiversity research, eco-

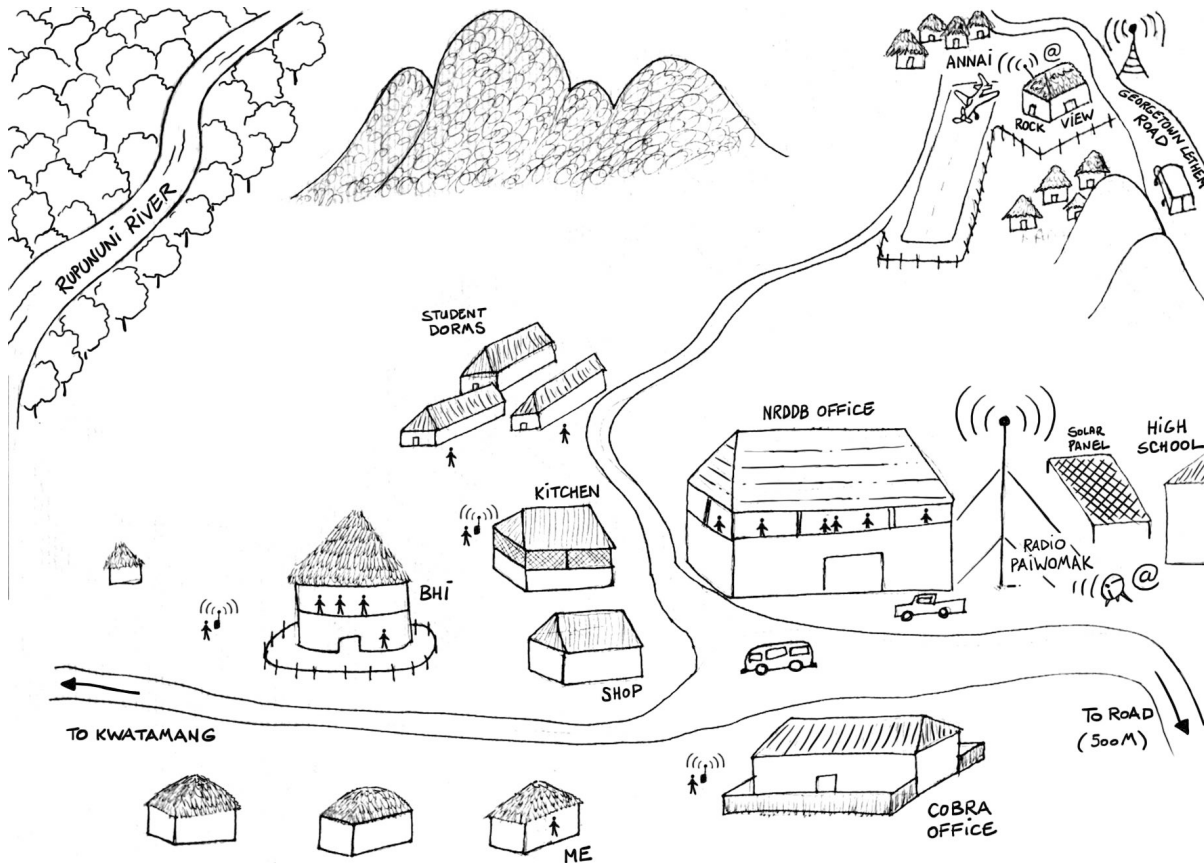
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<sup>3</sup> Hereafter referred to as *Iwokrama*

tourism, and led to the establishment of several enterprises for the sustainable exploitation of the reserve's natural resources. The activities developed include selective logging, aquarium fish harvesting, butterfly farming and other small-scale activities based on natural resources.

The creation of this vast protected area, which partly overlapped with the traditional territory of North Rupununi Amerindian communities triggered the establishment of an Indigenous counterpart organisation: the North Rupununi District Development Board (NRDDB). The NRDDB was set up to represent the interests of North Rupununi residents, and monitor the activities of Iwokrama and other development agencies with projects in the area (Allicock 2003). Over the years, the NRDDB emerged as the main local development stakeholder organisation in the region. Its headquarters are based in Bina Hill (Figure 3), on the Annai Amerindian Territory (AAT), a regional hub and administrative centre for the communities of Annai, Rupertee, Kwatamang, Wowetta and Surama.





**Figure 3 – A personal representation of Bina Hill**

Located along the Georgetown-Lethem road, the AAT features the district hospital, a secondary school, a police station, an all-weather landing strip for small airplanes, a community radio as well as, since 2013, a telecommunications tower. However, outside the AAT, communities of the North Rupununi have minimal infrastructure in place, with regard to transportation, law enforcement, health, education, water supply and energy. The isolation of many communities, low population density, limited engagement with a cash economy, low capacity in terms of skills and knowledge and overall poverty mean that for most communities, access to ICT infrastructure is not really cost-effective or possible.

Most communities in the North Rupununi have a nursery and primary school, with the only secondary school being located at Annai, where children attending from distant communities have to board. This has significantly eroded traditional Makushi language and culture, as the children attending school are only taught in English and are not able to participate in traditional livelihood activities. Churches of various denominations and health centres are also present in all the villages. Although most people would identify themselves as Christians, everyday life sees a blend of traditional beliefs and Christian values being practiced simultaneously.

### ***1.2.2 Colonial History and the Path to Emancipation***

After having been relatively preserved from Spanish occupation during the first hundred years of the European colonisation, ancient reports made to the Spanish king in the beginning of the 17<sup>th</sup> century revealed frequent visits by English and Flemish ships to the coast of what was then known as *Guayana*, arguing that settlements were also being established:

*“[T]he Hollanders [...] with many gifts and articles of barter and clothing to the Indians have the whole region on their side, being united with the [Indigenous] Caribes, whom there are a great number” (Whitehead 1990:363).*

Following the establishment of a permanent presence on the shores of the Essequibo, Berbice and Demerara rivers, the Dutch began to create sugar-cane plantations. As the coastal economy started to develop, slaves were imported from Africa to serve the labour needs of plantation owners. The Dutch used their trade relationship to encourage Amerindians to settle in the vicinity of plantations and serve as a policing

force against escaped slaves as well as to help suppress revolts. After falling under British control in 1814, the three colonies became part of British Guyana in 1831. Two years later, slavery was abolished and many freed up slaves left the plantations to migrate south, establishing new towns in their wake. The British then began importing a large number of indentured labourers from their other Asian colonies to work on the plantations. In the absence of slaves to control, the colonial authorities lost their interest in keeping Amerindian populations close to the plantations, thereby prompting the withdrawal of the remaining populations from coastal areas to the hinterland. This contributed to shape the geographical and ethnical distribution that is still visible in contemporary Guyana (Menezes 1979).

Four centuries of colonial occupation had profound consequences for the Indigenous populations of Guyana. Their numbers declined dramatically due to the spreading of *Old World* diseases - to which native people had no immunity - as well as other factors including alcohol consumption, proxy wars, slavery and displacements (Burnett 2002; Forte 1988; Whitehead 1990). The impact of these factors was such that in 19<sup>th</sup> century British Guyana, Schomburgk, a famous explorer, calculated that only a few thousands of Amerindians were left, compelling him to write:

*"[T]he aboriginal races of [Guyana] seem to be fearfully hastening, as by divine decree, to complete annihilation" (Schomburgk 1836:104).*

He was wrong. After reaching a historical low in the 19<sup>th</sup> century, Indigenous Amerindian populations gradually recovered during the 20<sup>th</sup> century. Their absolute numbers grew four fold between the mid-1940s and the 2000s, to reach approximately 70,000 individuals, making Amerindians the fastest growing ethnic

group in Guyana (Bulkan 2013). However, many Indigenous peoples found themselves in a state of acute poverty and marginalisation. The displacement of Indigenous populations and the sheer reduction of their numbers placed them in a relationship of dispossession and dependency towards the colonial state, as has been shown elsewhere:

*"[T]he process of colonisation has left so-called indigenous peoples defeated, relegated to minor spaces, reservations, bread-crumbs of land conceded by the dominant society. Indians were separated from their sacred land, the land of their ancestors, and from their burial grounds with which they shared a deeply spiritual bond. Deprived of traditional environments, they were not only politically, but economically, culturally, and religiously dispossessed" (Wiessner 1999:58-59).*

In her paper titled "The Struggle for Recognition of the Indigenous Voice: Amerindians in Guyanese Politics", Janette Bulkan (2013), a Guyanese author and researcher retraces the long endeavour and intense pressure Amerindians have had to exert on the British Colonial State, followed by the Guyanese State, to obtain the recognition of their rights, and the protection of their traditional lands. In the first half of the 20<sup>th</sup> century, the policies adopted by the British rulers towards Amerindians were inspired by paternalism, and led to the creation of 1.3 million hectares (Mha) of reservations<sup>4</sup>. The State's basic education and health services were outsourced to Christian missions installed in these reservations. However, none of these Amerindian settlements were provided with actual land titles, and the state was

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<sup>4</sup> This corresponds to about 6% of the landmass of Guyana, or the size of Montenegro.

left free to seize areas according to its needs, as was the case in 1959, when the Government de-reserved 0.4 Mha in the Upper Mazaruni region following the discovery of diamonds (Bulkan, 2013).

The adoption of the first Amerindian Act in 1951, followed by universal adult suffrage in 1953 launched a period of growing influence for Guyanese Amerindians. Their rallying behind Stephen Campbell, a Catholic teacher and catechist of Arawak ethnicity resulted in his election to the Legislative Council in 1957. For the first time, the Amerindians were able to advance their own agenda in the national political sphere. And when the independence agreement was drafted, in 1966, it featured a commitment to settle Amerindian land claims:

*"Had it not been for Campbell's single-minded focus on land rights, Guyanese Amerindians might well lack secure land tenure, as is the case for indigenous peoples in the other circum-Caribbean territories of Belize and Suriname"*  
(Bulkan 2013:5).

The removal of colonial rule resulted in its replacement by an authoritarian regime led for almost 20 years by Prime Minister Forbes Burnham. Although the establishment of a 'Cooperative Republic' in 1970 reduced the extreme levels of inequalities amongst the population, it did little to devolve decision-making control to Indigenous communities for managing their affairs within their traditional territories. The first free and fair election was held in 1992. Seven years later, in 1999, a constitutional reform was undertaken and consultations held in Amerindian communities and villages. Some of the requests made by the Indigenous communities were the inclusion of a separate chapter on Amerindian rights in the Constitution, the

right to self-government in the framework of the state of Guyana, and provisions on consultations for government decisions that affect them.

A review process of the Amerindian Act was undertaken with assistance from the World Bank and the Inter-American Development Bank to make development and conservation policies compatible with the country's policies on Indigenous peoples (Colchester & La Rose 2010). The Amerindian Act was reformed in 2006, facilitating the demarcation and titling resolution processes in many outstanding cases (Chung Tiam Fook 2013). For the Government of Guyana, the new Act constituted an important step towards the protection of property rights of Indigenous peoples over lands, territories and natural resources (Guyana Ministry of Foreign Affairs 2006). In the following years, the demarcation process reached a peak with a total of 2.9 Mha of land awarded as communal tenure, attaining 13.8% of Guyana's landmass.

However, the demarcation process was riddled with issues, and left several dozen communities without fair land titling, and many others with titles covering only a small part of their traditional lands. Far from reaching unanimity within Indigenous circles, the Amerindian Act was heavily criticised on the basis that it was contrary to their Constitutional rights, as well as to Guyana's international treaty obligations. For instance, it created a difference of treatment between Amerindians living in demarcated areas and those living on state lands, a difference that was deemed discriminatory. A complaint was even submitted to the United Nations Committee on the Elimination of Racial Discrimination (Colchester & La Rose 2010). Another concern of Amerindians was that, behind the official recognition of Indigenous rights, the revised Amerindian Act disempowered Amerindians by giving the right to the

Minister to veto the decisions of elected Amerindian Village Councils. In practice, it enabled the Government to override the vote of an Amerindian community to oppose large-scale mining operations affecting Amerindian land if it was declared by the Minister as being in the public interest (International Human Rights Clinic 2007). Furthermore, it was pointed out that despite the demarcation process the Guyana Forestry Commission and the Guyana Geology and Mines Commission continued to issue logging and mining concessions overlapping with Amerindian traditional lands (Bulkan 2013). This issue and its consequences for Amerindian peoples was illustrated when, in January 2013, the Amerindian village of Isseneru lost a case against a miner on the grounds that he had his mining licence prior to the Amerindian Act of 2006 (Almas et al. 2014), a decision that had the practical effect of voiding the protection of the Amerindian Act for all the land conceded to miners before 2006. In reaction to the lost case, the Isseneru community declared:

*"We feel that when the High Court tells us that we have no rights to decide and control what takes place on our land, then the land is not ours... Just Friday, when inquiring at the office of the GGMC [Guyana Geology and Mines Commission], we learnt that our whole land is covered with mining concessions. Yet, the government has not informed us about this" (Hance 2013).*

This short overview illustrates that, in Guyana, the long-standing struggles with Indigenous recognition, emancipation and rights suggests that government interventions in Indigenous regions are enmeshed in wider questions of self-determination and participation.

### **1.2.3 The Growing Role of ICT in the Guyanese Development Discourse**

*“All citizens, businesses and public institutions in Guyana will have the opportunity to participate in the information and knowledge society in order to accelerate national development and prosperity” (Government of Guyana 2006:17).*

In Guyana, the recognition of the role of information and communication technologies in development dates back to 2001 and the publication of the National Development Strategy (NDS), a blueprint document which set out priorities for Guyana’s economic and social development policies spanning a 25-year period. Originally, the NDS saw ICT as an enabling factor in improving the country’s competitiveness and its social and economic growth. Access to ICT and knowledge were then seen as a way to tackle economic underdevelopment and inspire economic and social development. Plans for ICT development were included in a Poverty Reduction Strategy Paper (PRSP), published towards the end of 2001. Amongst a series of measures aimed at alleviating poverty, the PRSP set out a ‘Connectivity Agenda’ to help diversify the economy and support growth. The Government proposed three main measures which included the reform of the communications sector, the development of infrastructure and informatics parks, and the provision of training in information technology (Government of Guyana 2001). In addition, the National Development Strategy contained a specific recommendation regarding Amerindian and hinterland communities: the development of telecommunication systems to ensure that these communities stayed in contact with each other and with the coastland areas:



*“[A] communications network integrating telephone/telecommunication systems, roads, airstrips, improved river and sea communication and mass communication systems” (Civil Society of Guyana 1999:24.IV.1.12).*

In 2006, a joint effort by the Government and civil society organisations led to the finalisation of Guyana’s National Information and Communication Technology Strategy, i.e. a plan to “facilitate and ensure the dramatic increase of (...) social and economic wealth at all levels: individual, organisational and national” (Government of Guyana 2006:4). The strategy featured five objectives aimed at leveraging existing resources and accelerating economic and social development, while promoting prosperity and wellbeing: (i) capacity building; (ii) development of content and applications; (iii) infrastructure and connectivity; (iv) legislative and regulatory regime and; (v) IT enterprise development.

*“[We] want to be part of a global coalition that stimulates innovation and creativity to enable us to leapfrog over the high carbon development path that today’s business-as-usual trajectory suggests we must follow...” H.E. Bharrat Jagdeo, June 2009 (Op. Cit., 2013, p.2)*

The ICT developments were integrated in the 2009 Low Carbon Development Strategy (LCDS), which the Government was implementing at the time of this inquiry. This strategy resulted from an effort to set Guyana on a low carbon path to development and to benefit from existing and future Payment for Ecosystem Services (PES) funding schemes, such as the mechanism of the United Nations Framework Convention on Climate Change (UNFCCC) on reducing emissions from deforestation and forest degradation (REDD+). The LCDS was the internal application of a bilateral

agreement, signed between Norway and Guyana. According to this agreement, Guyana committed to keeping deforestation low in exchange of the payment of US\$250 Million over five years to contribute to the development of a low carbon economy:

*“[Investing] in strategic low carbon economic infrastructure, including a hydro-electricity plant at Amaila Falls; improved access to arable, non-forested land; and improved fibre optic bandwidth to facilitate the development of low carbon business activities” (Office of the President 2013:7).*

Two main ICT programmes were designed to help achieve the Government’s low carbon development objectives. Firstly, the *E-Governance Initiative* aimed to achieve the digitalisation of public services and provide a range of other ICT-related services. This programme notably featured the installation of 560 km of fibre optic cable passing through the North Rupununi region, and connecting the town of Lethem, in the southwest of Guyana, and the capital Georgetown. The second programme, named the *One Laptop Per Family* (OLPF), aimed to increase the ICT capabilities of Guyanese youth, and to provide the country’s poorest families with laptops and internet access. Launched in 2010, these programmes affirmed the Government’s ambition to transform the country into “one of the most inclusive digital societies in the world by 2015” (Office of the President 2013:25).

## **1.3 International Context of Intervention**

### ***1.3.1 Towards the Recognition of Indigenous Collective Rights***

In the second half of the 20<sup>th</sup> century, following a process started by the Universal

Declaration of Human Rights and decades of advocacy efforts by Indigenous rights groups and civil society organisations, a series of international conventions were progressively adopted to address Indigenous issues and protect Indigenous territories, cultures and lifestyles. The first international convention specifically dedicated to Indigenous people was voted on 5 June 1957 at the 40<sup>th</sup> session of the General Conference of the International Labour Organization (ILO): The Convention Concerning the Protection and Integration of Indigenous and Other Tribal and Semi-Tribal Populations in Independent Countries (ILO n°107). This convention placed a direct responsibility on the signatory states to protect tribal and semi-tribal populations on the grounds that Indigenous people were backward and unable to adjust to modern conditions (Niezen 2000). The state's protection towards Indigenous peoples was therefore seen as a measure, albeit a temporary one, to accompany the government's wider objectives of integration and assimilation (Moore & Lemos 1999). This assimilationist approach was echoed in the internal law of many South American countries, including in Guyana.

More than three decades later, in 1989, the International Labour Organization adopted Convention ILO n°169 on Indigenous and Tribal Peoples. For the first time an international body recognised the ethnic and cultural diversity of Indigenous people, and framed collective land rights as essential to Indigenous peoples' cultural and spiritual survival (Anaya 2006). The recognition of collective rights provided a far-reaching leverage to Indigenous people by challenging the focus of democratic liberalism on the universality of individual rights (Gray 1997; Hodgson 2002; Muehlebach 2001; Yashar 2005). However, the decision to ratify and translate its content into domestic law remained the sole responsibility of the signatory states.

Guyana did not ratify Convention ILO n°169, nor its older version, the Convention N°107.

After more than a decade of negotiations, the UN General Assembly adopted the Declaration on the Rights of Indigenous People (UNDRIP) in 2007, on the basis of a compromise on the highly contentious right to *self-determination*. The declaration provided an important support to Indigenous struggles by framing Indigenous wellbeing and development in terms of a right to recognition and self-determination (Bockstael & Watene 2016). Its article 3 states, in substance:

*“[T]hey freely determine their political status and freely pursue their economic, social and cultural development” (Art. 3, United Nations 2008).*

This right was however tempered by the addition of a provision at the very end of the declaration that explicitly rejected any right to become independent:

*“Nothing in this Declaration may be interpreted as implying for any State, people, group or person any right to engage in (...) any action which would dismember or impair, totally or in part, the territorial integrity or political unity of sovereign and independent States” (Art. 46, United Nations, 2008).*

For some, this compromise amounted to a distinction between external and internal self-determination (Badger 2011; Engle 2011), where internal self-determination would be equivalent to a form of extended autonomy. Tobin (2014), however, argued that the recognition of Indigenous peoples as “peoples” meant that the right of secession still subsisted, however unlikely or undesirable it may be for the parties:

*“[In light of] sustained threats to the livelihoods, health, lands, lives and cultural*

*integrity of forest peoples; failures to give due recognition to Indigenous peoples and their right to autonomy and self-governance; and, programs of assimilation, ethnic cleansing and cultural genocide may potentially be used as grounds to call for the exercise of the ultimate manifestation of rights to self-determination, the right to secede” (Tobin 2014:35-36).*

These developments suggest that over the last 30 years, Indigenous rights groups have internationalised their message and managed to make their way into the highest forums. In a 2005 report from the African Commission on Human and People’s Rights (ACHPR) and the International Work Group for Indigenous Affairs (IWGIA), ‘Indigenous peoples’ are referred to in the following terms:

*“[A] global movement fighting for rights and justice for those particular groups who have been left on the margins of development and who are perceived negatively by dominating mainstream development paradigms, whose culture and ways of life are subject to discrimination and contempt and whose very existence is under threat of extinction” (ACHPR and IWGIA 2006:11).*

### **1.3.2 Policy Contradictions and the Indigenous Paradox**

Despite growing international recognition of the collective rights of Indigenous people, including their right to freely determine their political status and to freely pursue their economic, social and cultural development, the situation of many Indigenous groups remains very dire, particularly in resource-rich regions. The 2009 report on the State of the World’s Indigenous Peoples published by the UN Department of Economic and Social Affairs argued, for instance, that national

governments and international institutions are sometimes pursuing policy objectives which are in contradiction with Indigenous rights, e.g. promoting national growth through exploiting the natural resources on Indigenous peoples' lands (Department of Economic and Social Affairs 2009). This situation leads to a paradox, which Sawyer and Gomez (2012) explain as follows:

*"[That of the] increasing number of international and national level instruments recognising the rights of indigenous peoples alongside the increasing marginalisation of the majority of indigenous peoples" (Sawyer & Gomez 2012:6).*

While the situation of Indigenous peoples and the efforts deployed by governments to protect their rights vary in every country, the UN report noted that Indigenous peoples around the world still suffer from the consequences of historic injustice, including colonisation, dispossession of their land and resources, discrimination as well as lack of control over their own ways of life.

*"Another major reason why indigenous peoples feel threatened by globalization is the way national governments and international institutions promote national growth through exploiting resources on indigenous peoples' lands while at the same time talking about protecting indigenous peoples' identities, traditions and cultural expressions. Indigenous peoples find that the two things are at odds and could potentially lead to a conflicting situation. They believe that many issues are being overlooked, such as their spiritual connections to their lands and territories, their concerns for the impact on their cultural identity and economic livelihood, and their unfair exclusion from decision-making processes, including*

*the process of free and informed prior consent and the lack of adequate compensation when the resources on the lands are exploited" (Department of Economic and Social Affairs 2009:70).*

The report observed that the right of Indigenous peoples to determine their development on their own terms has been largely denied by colonial and modern states in the pursuit of economic growth. As a consequence, despite constituting approximately five percent of the world's population, Indigenous peoples make up 15 percent of the world's poor, and about one-third of the world's 900 million extremely poor rural people (Department of Economic and Social Affairs 2009:21). In reaction to this situation, it was suggested at the World Conference on Indigenous Peoples that their rights and priorities should be reflected in the implementation of a new international agenda (Hongbo 2014).

### ***1.3.3 Consequences for ICT Interventions***

What then might be the implications of this paradox for the discussion on the relationship between ICT interventions and Indigenous wellbeing? Can these interventions help enhance the wellbeing of Indigenous communities in the spirit of their right to self-determination? Alternatively, might they instead be considered as furthering the alienation and marginalisation of Indigenous communities? Furthermore, how does one define Indigenous wellbeing anyway, and how might the impact of such interventions on Indigenous wellbeing be evaluated?

Research has documented how Indigenous communities use ICT as communication outlets to mediate issues, such as human rights violations, and mobilise the

international community in times of crisis. For instance, some studies have shown how some Indigenous peoples use ICT in creative ways to share information as well as to build solidarity with national and international audiences around issues which affect their rights and survival (Belton 2010; Dyer-Witthford 1999; Hirtz 2003; Landzelius 2003, 2006; Stahler-Sholk 2010; Zimmerman et al. 2000). As Landzelius puts it:

*“[T]he nowhere/everywhere virtuality of cyberspace may mean that groups otherwise far on the periphery of power can nonetheless commandeer information hubs and alliances to gain center stage, in geo- as well as local politics” (Landzelius 2003:12).*

Others have suggested that ICT may also be used as part of a strategy to safeguard Indigenous culture and traditions (Assies 2000; Fisher 1996; Garfield 2001). ICT and mobile devices in particular offer new possibilities for the recording and the transmission of their social memory. The visual culture enabled by online communication shares similarities with more traditional forms of communication, such as the oral traditions shared by many Indigenous peoples (Smith et al. 2000; Zimmerman et al. 2000). For instance, Mistry et al. (2014) have argued that the growing access to digital technologies is allowing Indigenous peoples to present sophisticated and differentiated narratives in order to maximise their survival as autonomous and distinct socio-cultural units within an increasingly homogenous neoliberal global culture.

Yet, the diffusion of ICT in remote regions may equally present new challenges for Indigenous peoples. In their wake, ICT can facilitate criminal networks and



multinationals' access to exploit the land and resources on which Indigenous people depend. Infiltration by political and corporate networks may also reduce the cooperation potential of these technologies by sending distorted messages to users, or invading spaces where alternative ideas emerge (Evans 2002). Indigenous cultures are open to the risk of commodification, as they are made available to a wider audience. The proliferation of ICT could also be responsible for the apparition of an influx of cheap manufactured products which may undermine local Indigenous production chains (Department of Economic and Social Affairs 2009). In addition, the modernist logic conveyed by ICT interventions would tend to draw their recipients, in particular Indigenous peoples, towards a system of beliefs alien to them, and risking the loss of cultural identity (Diaz Andrade & Urquhart 2012:289).

For Indigenous peoples, or those identifying with an Indigenous identity, this question may also bear political and legal implications. It has been suggested, for instance, that non-Indigenous actors use to their advantage their own conception of Indigenousness to question the legitimacy of Indigenous people's rights claims (Bolanos 2011). Li (2000), who has worked on Indigenous identity in Indonesia, explains that even for those people who are eligible for Indigenous status, the concept can be a double-edged sword: they risk resettlements if they are seen as too primitive, as well as if they are seen as not primitive enough, albeit on different grounds.

Following this brief overview, one might rightly be tempted to rule out the question of whether ICT is good or bad for Indigenous peoples, which inevitably leads to the risk of essentialism of Indigenous identities (Jackson & Warren 2005). Instead, one

might suggest that to better understand the political, economic, social and cultural implications of ICT, what matters are the dynamics of intervention itself, including its aims, objectives and process of implementation and, crucially, how the impacts of such interventions on Indigenous wellbeing might be evaluated, by whom, and against which criteria.

## **1.4 Research Objectives and Questions**

The central aim of this doctoral thesis is to explore the interplay and enhance understanding of the relationship between ICT interventions and Indigenous wellbeing. Whereas there appears to be a certain support for ICT interventions in Indigenous communities, the scope and implementation of such interventions, as well as the means for evaluating their success are still a matter of discussion amongst both researchers and practitioners associated with ICT interventions (both planning and implementation). Heeks and Molla (2009) have argued that despite billion dollars of investment in ICT4D interventions, there is very little sense of their impact. Using Guyana and the North Rupununi as a contextual backdrop to carry out research on a number of case studies, two main objectives are pursued:

- To explore how ICT interventions affect the wellbeing of Indigenous communities in the North Rupununi, Guyana.
- To understand how such interventions might contribute to increasing the wellbeing of Indigenous communities.

In addressing these objectives, three research questions are asked:

1. In the context of the North Rupununi, Guyana, how do selected national and local ICT interventions affect Indigenous communities' wellbeing?
2. What is the role of evaluation in ICT interventions, and how might it be enhanced in order to directly address Indigenous wellbeing?
3. What recommendations might be made from this doctoral research to inform policy on ICT interventions for Indigenous wellbeing?

A roadmap of where these questions are predominantly addressed in the ensuing chapters is also proposed (Table 1). Areas that are greyed-out represent the chapters where a research question is addressed directly (dark grey), or indirectly (light grey).

**Table 1 - Research roadmap**

Research Question	Chapter								
	1	2	3	4	5	6	7	8	9
1. In the context of the North Rupununi, Guyana, how do selected national and local ICT interventions affect Indigenous communities' wellbeing?									
2. What is the role of evaluation in ICT interventions, and how might it be enhanced?									
3. What recommendations might be made from this doctoral research to inform policy on ICT interventions for Indigenous wellbeing?									

## 1.5 Thesis Structure

The objectives of this thesis will be met through the following structure. Chapter 2 introduces the literature about information and communication technology for development (ICT4D), explores approaches to human wellbeing, and focuses on the Capability Approach, before looking at the potential role of critical systems thinking

and pragmatism in ICT4D evaluation. Chapter 3 presents the methodology, and introduces the case study approach adopted in this research as well as the research design. It then outlines the evaluation principles and methods of analysis, as well as the methods and techniques of data collection. Chapters 4-6 apply the proposed evaluation framework to three case studies analysed in a first strand of inquiry, featuring ICT interventions that have taken place in Guyana at the national and local level. Chapter 7 then builds on the lessons from the first strand of inquiry and moves to evaluate a researcher-led ICT intervention that was carried out in the North Rupununi between June 2014 and May 2015. The empirical findings are discussed in Chapter 8, and the evaluation principles are expanded into an evaluation framework, building on the lessons learnt from their application to this research. The chapter concludes with recommendations for policy makers. Chapter 9 summarises the findings of this thesis, before answering the research questions and the contribution to research. Lastly, it proposes a few questions, which might be explored in future research.

## **1.6 Motivations of Research**

The act of researching is not a value-free exercise (Mistry et al. 2009). It can therefore not offer a perfectly neutral or objective point of view. Before jumping headlong into the research, I therefore need to clarify my worldview and the motivations that pushed me to undertake this research in the first place. Only by revealing my own positionality to the reader, can I help her/him make sense of this document.

Having spent most of my life in Brussels, Belgium, I was raised in a white, lower

middle class family as the eldest of three children. My parents come from large traditional Belgian families characterised by Catholic values and relatively strict social rules. Unlike her sisters, who became stay-at-home moms, my mother worked most of her adult life, raising three children at the same time. My father fought his own battle when he decided to become an artist and graphic designer, to the dismay of his parents, who had expectations of a university-level profession for him. Neither of them really sought to pass on their Catholic heritage to us, and my siblings and I grew up in an environment of defiance towards (conservative) authority, challenging the status quo and valuing ideas of freedom, social and environmental justice.

I did my schooling in a Catholic school, although this was a consequence of the peculiar structure of the education system in Belgium, where Catholic schools are usually credited with higher quality teaching than other, non-confessional schools. Later, I went on and studied my Law degree in Brussels, followed by an additional diploma in Development Studies. In my working life, I developed a strong interest in development communication, which naturally brought me to experiment with and learn a broad range of techniques, including storytelling, graphic design and online communication. But in 2011, two events helped shape my decision to undertake this doctorate research. The first was the Arab Spring and its formidable upheavals against established and authoritarian regimes, which was attributed by some to the use of ICT. The second was my involvement in a EU-funded project, which brought me to use participatory video and photography techniques with Indigenous communities in the Guiana Shield, South America. Both events raised questions as to the exact role of ICT in the liberation of marginalised or oppressed people, and the modalities by which these technologies could be harnessed to empower users.

# Chapter 2. ICT Interventions for Indigenous Wellbeing

## 2.1 Introduction

The relationship between modernisation, technology and social change has long captured the imagination and interest of researchers and practitioners (Buchanan 1995; Westrum 1991). The study of the application of ICT in the field of development – often referred to with the ICT4D acronym (Box 2) – is however more recent. ICT4D has grown as an area of research and practice situated at the convergence between informatics and development studies. It draws on a variety of disciplines and fields, including information systems (Avgerou & Walsham 2000; Bhatnagar & Bjorn-Andersen 1990; Bhatnagar & Odedra 1992; Odedra-Straub 1996; Roche & Blaine 1996; Walsham & Sahay 2006), human-computer interaction (Dearden 2008), computer science, and communication studies (Mansell 2002). Other disciplines include sociology, economics and governance (Heeks 2010). While its multidisciplinary has contributed to producing a rich body of literature (Gomez 2013; Patra et al. 2009), each of these disciplines also has its preferred approach for characterising the role of ICT in development, e.g. favouring technological, information, or people centric approaches. As a result, the field is open, dynamic and conflicted.

### **Box 2 - Multiple acronyms, different meanings**

Some researchers refer to ‘information and communication technologies *and* development’ (ICTD) (Avgerou 2010; Dearden & Dearden 2013; Gomez 2013; Kai-Ti Kao 2010; Perez & Ben-David 2012). This is also the case at the ICTD international conference held almost every year since 2006, which describes itself as an international forum for researchers and practitioners exploring the role of information and communication technologies in social, political, and economic development. Others refer explicitly to ICT *for* Development, popularised by the use of texting shorthand within its acronym: ICT4D (Diaz Andrade & Urquhart 2012; Heeks 2008). They argue that using the ICT4D acronym provides a purpose for activity, and has the advantage of forcing practitioners to make explicit what they mean by development, thereby helping to uncover assumptions (Kleine & Unwin 2009; Walsham & Sahay 2006). More recently, the term *digital development* was said to have gained renewed interest (Heeks 2016)<sup>5</sup>.

In the 1980s and 1990s, the information systems (IS) literature was the home of ICT4D research. IS aimed to make sense of new technological opportunities and the increasing computerisation of developing economies (Heeks 2008). The interest of IS was to design systems aimed at helping governments and business organisations develop and use ICT effectively (Walsham 2012). It was therefore essentially driven by objectives of effectiveness and competitiveness, and focused on issues of technology transfer and implementation (Ad Hoc Panel 1987; Cyranek & Bhatnagar 1992; Grant-Lewis 1987, 1992; Lind 1991; Odedra 1992), the contribution of systems development methodologies for analysing the socio-organisational conditions in developing countries (Bell & Wood-Harper 1990; Korpela 1996; Korpela et al. 2000; Mursu et al. 2003), as well as technology adoption in recipient countries (Al-Gahtani 2003; Rose & Straub 1998).

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<sup>5</sup> For the sake of clarity, I hereafter solely use the acronym ICT4D.

In the mid-1990s, rising inequalities in the spatial and social distribution of ICT between rich and poor countries became the focus of international development agencies, which adopted new targets to reduce what became known as the *digital divide*. It was assumed that enabling access to ICT would generate favourable conditions to lift economically-deprived and marginalised people out of poverty (Kenny 2000; Mbarika et al. 2007; Norris 2001; Wresch 1998). A model advocating the installation of telecentres was promoted, as it presented multiple advantages for donor organisations: telecentres were quick to install and produced tangible evidence of achievement, delivering internet access to the poor and, not least, also providing sales for IT companies, which were overwhelmingly established in rich countries. ICT was sold to populations as a vehicle for the social engineering of wellbeing, and for transmitting the western lifestyle, along with the culture of individualism and self-motivation (Lerner 1958). Underlying this was a vast communication system aimed at convincing societies on the necessity to adopt digital technologies, and more generally, to embrace modernity:

*“Using the language of ‘digital revolution’ and ‘information superhighway’, marketing professionals and politicians together ensured that the general public was aware of the significance of the crucial role of new ICTs in their societies”*  
(Kleine & Unwin 2009:1048).

However, the implementation of telecentres as a poverty reduction strategy also drew important criticisms. The approach was accused of forcing a modernist logic onto its recipients in general, and Indigenous peoples in particular, drawing them towards a system of beliefs alien to them, and risking the loss of cultural identity



(Diaz Andrade & Urquhart 2012). It was also argued that the focus of donors on bridging the technological divide in developing countries was leading to new dependencies from these countries towards those that owned and designed the technologies (Wade 2002). However, the biggest criticism of the telecentre model focused on the lack of impact of past interventions on poverty reduction and wellbeing (Bailur 2007b; Madon et al. 2007; Parkinson & Lauzon 2008). An account of a World Bank policy paper by Wade (2002) explained, for instance, that following the installation of 23 multipurpose community telecentres in rural Mexico, only five were working two years later. The high rate of failure was attributed to a gap between the blueprint approach advocated in the telecentre model, and the local contexts in which they were implemented (Heeks 2002).

The poor success of the telecentre model was not, so to speak, a purely ICT4D issue; it echoed a more general failure of mainstream development policies to address the wellbeing needs of its beneficiaries. The modernisation theories that emerged after the Second World War had depicted development as a linear process (Rostow 1959), mechanically guiding the evolution of societies from traditional to modern ones (Unceta 2009). Building on the heritage of colonial sciences, which had created the concept of primitive society, modernisation theorists had portrayed the notion that underdevelopment was a consequence of a nation's internal characteristics. In other words, they had suggested that it was the traditional sectors that were keeping a nation backward. The cure for these societies included embracing a combination of technical and social innovations aimed at creating favourable conditions for economic growth. It proposed a modern vision of development, where the dynamism of technological innovation and adoption replaced the traditional processes of

production associated with poverty and stagnation<sup>6</sup>. In doing so, modernisation theories voluntarily ignored the contextual differences that made each society unique, as well as their specific wellbeing priorities and needs. Rather than adapting their model to address each society's particular needs, modernisation theorists encouraged each society to adapt to the proposed model, through the use of blueprint, expert-led and technical policies. However, the violence exerted by these policies on traditional cultures and identities, and their negative impact on ecosystems and livelihoods led to increasing challenges to the proposition of a universal, linear development model as proposed by modernisation (Escobar 2004; Gudynas 2013). Modernisation was accused of increasing social and ethnic inequalities and of marginalising territories and populations, thereby exacerbating conflicts. This was notably attributed to its tendency to neglect the structural relations of power, dominance and exploitation of the global capitalist system (Ruttenberg 2013).

*“Large scale hardware and operating system innovation specifically targeted at the bottom-of-the-pyramid are risky ventures, reserved only for the brave or*

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<sup>6</sup> These ideas were further reinforced by the resurgence of 19th century ideas associated with laissez-faire economic liberalism, embodied notably by Margaret Thatcher and Ronald Reagan in the early 1980s. After several decades of domination of structuralist ideas on the necessity of public interventionism, neoliberal economists produced a counter discourse advocating the enhancement of the role of the private sector in the economy through a series of economic liberalisation measures including privatisation, deregulation, free trade and cuts in government spending. They multiplied studies aiming to show that the failures of the market had a lesser economic cost than those of the state, and that de-regulating the market and promoting exports was the best way to organise a complex economy and fight poverty (Balassa 1978; Krueger 1978; Little et al. 1975). The success of countries such as South Korea and Taiwan was presented as evidence of the superiority of their thesis. In effect, neoliberal ideas also provided capitalist elites with a powerful counter narrative to the radical ideas about development alternatives that were emerging all around the world and, in particular in South America.

*foolish” (Heeks 2008:29).*

Within the ICT4D community, the shortcomings of the telecentre model lead to a self-assessment, as well as a reconsideration of blueprint intervention models, in favour of small(er) scale, participatory and adaptable models. Arguments were also made to further deepen ICT4D research, and to compensate the lack of theory and conceptual definition, e.g. through interdisciplinary approaches, qualitative research and longitudinal research (Gomez & Pather 2010; Van Dijk 2005). Furthermore, experiences and lessons from the implementation of telecentres built a strong case for developing more effective instruments for the monitoring and evaluation (Box 3) of ICT interventions, in order to better understand how they affect the wellbeing of their beneficiaries (Kleine and Unwin 2009). This was particularly relevant in Indigenous contexts where worldviews and values deviate significantly from those promoted in global development models and which often drive development interventions.

### **Box 3 - Defining evaluation**

Evaluation consists in making judgements of merit, worth and significance (Scriven 1995). These judgments correspond to degrees of impact. For instance, an intervention might be said to have *merit* if it promotes Indigenous rights, *worth* if it actually changes Indigenous rights for the better, and *significance*, if Indigenous rights protection and promotion is a worthwhile endeavour for enhancing their wellbeing. In the field of development, a wide range of evaluation models, methods and techniques are available to researchers and practitioners, including but not limited to: the logical framework, or ‘logframe’ (Sartorius 1991), experimental design (Bonell et al. 2006), programme theory evaluation (Rogers et al. 2000), theories of change (Weiss 1995), realist evaluation (Pawson & Tilly 1997), systems based approaches (Williams & Iraj 2007), and complexity approaches (Forss et al. 2011). Scientific evaluation methods, such as randomised control trials (RCT) used in experimental

design, as well as the logframe approach are among the conventional approaches used in development interventions.

In their “Compendium of Approaches” to ICT4D impact assessment, Heeks and Molla (2009) propose an ICT4D Value Chain built around a standard input-output process (Figure 4). The value chain provides an overview of the main targets for assessment, divided into four different stages - *readiness*, *availability*, *uptake* and *impact* – which characterise the life of an ICT intervention. This value chain, the authors argue, is not meant to give specific guidance on how to carry out ICT impact assessments (Heeks & Molla 2009:6). However, it can be used as a normative tool to assess the value of other ICT4D evaluation frameworks, suggesting that the more a framework focuses on the impact stage, the more valuable it becomes for assessing the impact of an ICT intervention on wellbeing. At the heart of these considerations lie several questions, such as how to define wellbeing, how to measure it, as well as who should do it. I will now set the stage for this doctoral research by reviewing several bodies of literature. Section 2.2 begins by looking at wellbeing traditions in the literature and provides an overview of the main theories that have influenced poverty-reduction policies. Section 2.3 introduces the capability approach (CA) as an alternative, people-centred approach to wellbeing evaluation. It discusses its theoretical strength as well as its relevance for the evaluation of Indigenous wellbeing. It concludes by pointing to some elements that might be given more consideration here, given the nature of this study and its research question. Section 2.4 then explains how wellbeing evaluation might benefit from the use of critical systems thinking and participatory action research concepts and techniques.

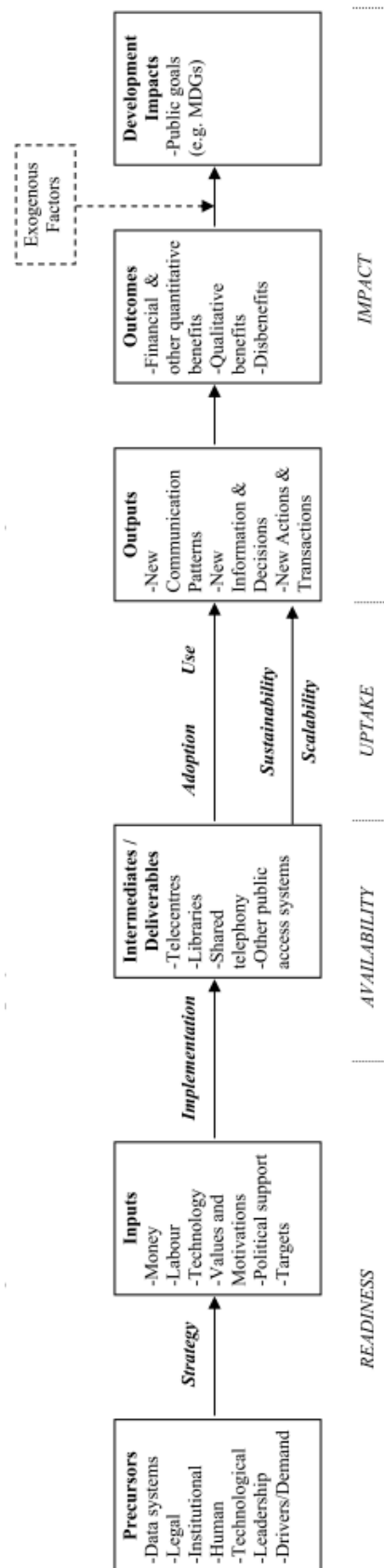


Figure 4 - ICT4D Value Chain (Heeks and Molla 2009)

## 2.2 Wellbeing Traditions and Theories

### ***2.2.1 Objective Approaches to Wellbeing***

The study of wellbeing<sup>7</sup>, and the mechanisms to attain it have been a concern for human societies since ancient times, generating countless different theories and approaches, and involving many fields of research, including philosophy, economics, sociology and psychology. Taken broadly, these theories can be classified in two main categories, including objective and subjective wellbeing approaches (Parfit 1984). Objective lists theories suggest that personal wellbeing can be met by fulfilling externally defined material, social and psychological needs (Dolan et al. 2006). These lists have the advantage that they feature targets designed by experts, and which can be measured using universally applicable, quantitative tools. In doing so, they facilitate comparisons, e.g. between communities, villages, regions and countries. This may explain why they tend to be preferred to qualitative wellbeing measures and targets by international institutions and governments for guiding policy (Dolan and Metcalfe 2012), for instance as in the case of the Millennium Development Goals (MDGs).

Whilst they may make the life of policy-makers easier, objective lists tend to lose in flexibility, contextual relevance and cultural sensitivity (Schmidt and Bullinger 2007). A critique of objective lists suggests that their rigidity fails to reflect changing expectations and adaptations. For instance, Shogren et al (1994) have argued that once individuals expect that they will be endowed with a certain good, their value of the good changes. Similarly, projects and policies have been shown to change people's

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<sup>7</sup> In its most basic form, as provided by the Oxford English Dictionary, wellbeing is defined as a state characterised by health, happiness and prosperity (Agarwala et al. 2014).

preferences (Bowles 1998; Elster 1983). A broader approach to wellbeing might also include social and geographical inequalities, or identify situations where securing present wellbeing might jeopardise future wellbeing (Wood 2007). It might also recognise that the components of wellbeing may change according to those whose wellbeing we wish to assess, but also with respect to age, gender, culture, and to the time span considered (Agarwala et al. 2014).

In addition, it can be argued that the setting up of objective priorities, and the development of indicators for monitoring and evaluating wellbeing is not a value-neutral exercise. Invariably, it translates the worldviews of those who are involved in the design of these lists. It may even disempower individuals and groups from voicing their own opinions and affirming their own perspectives. It has been suggested, for instance, that the MDGs do not capture many of the criteria that Indigenous peoples consider of relevance to them:

*“By focusing solely on gaps with mainstream majority populations, they implicitly downplay the significance and relevance of unique Indigenous priorities and worldviews” (Taylor 2012:120).*

Looking at the case of Australia, Taylor (2006) suggests that many of the country's areas where Indigenous language is intact are also the ones where socio-economic – wellbeing - indicators scores are the lowest. Yet, he argues that if disadvantage was measured according to Indigenous perceptions of wellbeing, then the preservation of their language, and Indigenous culture in general, would be considered advantageous. Not selecting the right indicators is not merely an issue for the accuracy of the monitoring and evaluation process; it can even have negative consequences for

Indigenous peoples. For instance, it has been shown that efforts to reach some MDG targets have in fact accelerated the loss of lands and resources crucially needed for their livelihoods, or even displaced Indigenous communities away from their traditional lands. Once again, the question of whose values are being advanced in these lists needs to be asked.

John Bamba, an Indigenous Dayak from Kalimantan, has summarised the seven principles and philosophies for living a good life, based on the Dayak's traditional cultural values, as opposed to the western values, which he attributes to the global development model (Table 2). He argues that these traditional cultural values could offer criteria and indicators for self-determined Indigenous development (International Expert Group Meeting 2010). Further work done by the International Indigenous Forum on Biodiversity Working Group operating under the framework of the Convention on Biological Diversity (CBD) led to the selection of twelve global core themes relevant to Indigenous peoples, producing lists of sub-core issues and indicators. These themes include: (1) security of rights to territories, land and natural resources; (2) integrity of Indigenous cultural heritage; (3) respect for identity and non-discrimination; (4) culturally-appropriate education; (5) fate control; (6) full, informed and effective participation; (7) health; (8) access to infrastructure and basic services; (9) extent of external threats; (10) material wellbeing; (11) gender; and (12) demographic patterns of Indigenous peoples (Tauli-Corpuz 2008).



**Table 2 - Principles and philosophies for self-determined Indigenous development versus the global development model (International Expert Group Meeting 2010)**

Self-determined model		Global development model
Sustainability	Versus	Productivity
Collectivity	Versus	Individuality
Naturality	Versus	Engineered
Spirituality	Versus	Rationality
Process	Versus	Results
Subsistence	Versus	Commerciality
Customary Law	Versus	State Law

These examples demonstrate some of the difficulties with objective lists approaches, their lack of flexibility and the discrepancy that may exist between the *universal* values promoted by the global development model, and what many would associate with Indigenous worldviews, and their priorities in terms of wellbeing, poverty, and sustainability (del Val & Cunningham 2008).

### **2.2.2 Subjective Approaches to Wellbeing**

*"[Subjective wellbeing] encompasses different aspects (cognitive evaluations on one's life, happiness, satisfaction, positive emotions such as joy and pride, and negative emotions such as pain and worry), each of them should be measured separately to derive a more comprehensive appreciation of people's lives...*

*[Subjective wellbeing] should be included in larger-scale surveys undertaken by official statistical offices"* (Stiglitz et al. 2009:16).

Arguing that wellbeing is primarily a personal experience, which cannot be

objectivised through some exogenous priority setting, another category of approaches advocates the use of subjective wellbeing measures. Ryan and Deci (2001) oppose two important subjective wellbeing traditions rooted in the works of ancient Greek philosophers: the hedonic view and the eudaimonic view. Fourth century BC philosopher Aristippus taught that the goal of life was to seek and experience the maximum amount of pleasure, equating happiness to the totality of one's hedonic moments. Hedonism, understood as the pursuit of a "desirable and agreeable state of consciousness" (Cohen 1989:909), constitutes the basis of Bentham's classical utilitarian philosophy, and the heart of the western conception of wellbeing (Layard 2005), as evidenced, notably, by desire and preference satisfaction theories.

Desire and preference satisfaction theories imply that wellbeing is attained by meeting the satisfaction of a person's desires or preferences (Olsaretti 2006). This approach, which has traditionally been the focus of economists (Harsanyi 1997), builds on the assumption that "what is best for someone is what would best fulfil all of his desires" (Parfit 1984:494) or, indeed, preferences. Unlike objective lists, these theories are inherently liberal and subjective; they aim at allocating resources optimally, and equate wellbeing with the maximisation of utility (Agarwala et al. 2014). Such theories influence public policy by shifting from the construction of externally assessed wellbeing priorities, towards a focus on achieving individuals' desires and preferences, through universalist models essentially measured with quantitative socioeconomic indicators (Ruttenberg 2013), such as economic growth.

However, the utilitarian roots and pragmatic concerns of desire and preference

satisfaction fail to integrate non-income indicators and, as a result, produce a rather narrow picture of subjective wellbeing centred on economic wealth. Indeed, while the literature does show some evidence between income and subjective wellbeing (Kahneman & Deaton 2010; Stevenson & Wolfers 2008), researchers have also described that increased spending may reduce happiness (Dominguez & Robin 1999; Frey 2010). Others have shown the importance of relative wellbeing, e.g. how the inclusion of other people's incomes in the assessment might produce different results (Layard et al. 2010; Luttmer 2005). At the macro-level, it has been argued that, past a certain threshold, happiness does not increase when a country's income increases (Easterlin et al. 2010). In his book on the economics of happiness, Anielski (2009) argues that many life conditions for the average US citizens have actually grown worse despite increasing levels of GDP. Although pragmatic concerns for data reliability, availability and comparability have been raised to justify the use of income indicators (Boarini et al. 2006), many economists argue that there is a need to also include other indicators for measuring wellbeing (Di Tella & MacCulloch 2006, 2008). Consequently, more recent policies of happiness have also tended to include context-specific components and to open up the possibility of examining differentiated experiences of wellbeing (Agarwala et al. 2014). Such approaches have notably been used in the UK (Cameron 2010; Dolan & Peasgood 2008; Dolan & White 2007; Donovan & Halpern 2002; Edwards & Imrie 2008; Kahneman & Krueger 2006; Kahneman & Sugden 2005; Layard 2005).

## 2.3 Beyond Happiness: The Capability Approach

### 2.3.1 Foundations and General Principles of the Capability Approach

A different view of subjective wellbeing can be found in Aristotle's *Nicomachean Ethics* (1985), which lays in the theory of self-realisation, or *Eudaimonia*. It suggests that people should live in accordance with their *daimon*, or true self, and strive towards the realisation of their potential by living a life of activity in accordance with reason and excellence (Ransome 2010; Ryff 1995; Waterman 1993). Excellence, as the manifestation of a reaction to circumstances, is a central component of *Eudaimonia*, from which everything else derives. Perfect wellbeing therefore implies being able to cultivate internal resources for living a life of excellence, rather than the mere achievement of happiness and/or pleasure. In other words, it suggests that wellbeing should be detached from the concept of wellness, and elevated to another level, featuring self-accomplishment, freedom and agency. *Eudaimonia* differs quite strongly from the hedonist philosophical approach, which tends to underpin many international and national development policies. According to Deneulin and McGregor (2010) the eudaimonic conception of wellbeing is more readily found in Asian philosophies, such as in Buddhism. For Ransome (2010), this tradition also underpins Amartya Sen's capability approach (CA).

Situated at the crossroads between moral philosophy and economics, the CA corresponds to an attempt at shifting the discussion away from the traditional theoretical presumption of foundational monism, which characterises objective lists, and subjective wellbeing theories, as they tend to reduce all other values to a single evaluative foundation (Ransome 2010). The CA is attributed to the seminal works of

Amartya Sen (1980, 1983, 1984, 1985a, 1985b, 1988, 1990, 1992, 1993, 1995, 1999, 2002, 2004a, 2004b), and Martha Nussbaum (1988, 1992, 1998, 2000, 2003).

Robeyns (2005) defines it as “a broad normative framework for the evaluation and assessment of individual wellbeing and social arrangements, the design of policies, and proposals about social change in society” (2005:93). The CA advocates a freedom-centred, flexible and pluralist approach to wellbeing.

The CA stems from a critique of the informational basis of welfarism<sup>8</sup> and, more generally, the use of explicit (e.g. through the requirement of universalisability) and implicit (e.g. in utilitarianism) informational constraints in moral analysis (Sen 1985b). The application of universalisability suggests the need to make identical judgments in identical circumstances, as being entailed by the meaning of moral language (Hare 1952). However, for Sen (1985b), such universalisability rests on the presumed objectivity of moral beliefs, which in turns requires some type of invariance. He suggests that even if two persons share *exactly* the same moral beliefs, their moral valuation may vary according to their respective position in the given state of affairs. In practice, this makes objectivity very difficult, if not impossible to achieve, and therefore challenges the very possibility of universalisability in moral analysis.

Sen (1999) also rejects the application of the utilitarian framework for empirical analysis in welfare economics, e.g. its focus on income and commodities, as well as the concept of primary goods, as proposed in Rawls’ theory of justice (Rawls 1971, 1982), arguing that all human beings are different. In addition, environmental

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<sup>8</sup> Welfarism is here understood as defining efficient social states as those in which no individual can be made better off without an offsetting loss to another individual (Anand et al. 2005).

diversity, variations in social context, which affect the translation of commodities into human development outcomes, and differences in relational perspectives suggest that people have different commodity requirements for achieving the same capabilities (Deneulin & McGregor 2010).

More radically, Sen (1985b) interrogates the subject matter of morality as seen by philosophical utilitarianism, according to which “the only fundamental moral facts are facts about individual wellbeing” (Sen 1985b:185). Arguing that there is more to life than achieving utility, or pleasure, he rejects utilitarianism’s neglect for *non-utility* concerns, such as rights and freedoms from moral judgments. For instance, the principle according to which men and women should be paid the same wage for the same work would have no value for utilitarians, provided that women are *satisfied* with lower wages (Robeyns 2005). This example highlights another issue, which Sen attributes to utilitarianism: normative theories that rely exclusively on mental states, such as happiness, are subject to a risk of overlooking phenomena of hedonic adaptation to adverse circumstances and of mental conditioning. In other words, it suggests that a person’s tastes and desires adapt to the situation he or she is faced with, however undesirable or bad it may be (Diener et al. 2006; Gilbert et al. 1998). As Sen (1985b) puts it: “In some lives small mercies have to count big” (1985b:191). Following this logic to the absurd, a privileged person with expensive tastes whose fancy desires are not met might declare him or herself less happy than a person who has few or no resources. A public intervention exclusively based on subjective wellbeing indicators would then be prone to help the person who is more privileged, rather than the poor person who reports a stronger mental state and shows more resilience (Austin 2016). Additional issues include the inability of utilitarianism to

distinguish between different types of pleasures and pain, that is, between preferences that are normatively different, e.g. the problem of 'offensive' (Cohen 1989)<sup>9</sup> or perverse tastes; as well as the problem of distributional indifference, that is, the inability of utilitarianism to identify inequalities in happiness. Such inequalities may notably affect intra-household members, e.g. through power dynamics and gender inequality.

Noting that there is a difference between wellbeing, which suggests a person's internal state of being and achievements, and being 'well off', which refers to his/her command of external things, the CA proposes that, rather than concentrating on objective and/or subjective criteria of happiness, desires, income, expenditures, or consumption, the primary feature of wellbeing should instead be seen in terms of how a person can *function*:

*"[It] is clear that the functioning approach is intrinsically information-pluralist. Although some consensus of valuations and the usability of various objective criteria may take us a great distance in establishing an extensive partial ordering in the comparison of wellbeing, it would be quite wrong to expect anything like the kind of complete ordering that utilitarians have made us prone to demand" (Sen 1985b:200).*

A person's *functionings* are what this person actually does and experiences (Anand et al. 2005). Accordingly, each individual is said to possess a collection of potential functionings, or a *capability* set, which allows him or her to achieve certain doings or

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<sup>9</sup> An example of an offensive taste could be a racist individual who claims that his pleasure derives from not seeing people with a different skin colour in the same room as him/her.

beings. In other words, capabilities refer to the feasible alternative combinations of functionings a person can achieve, or the “substantive freedoms a person enjoys to lead the kind of life he or she has reasons to value” (Sen 1999:87). This is a key element of the approach: it does not only focus on a person’s functionings, its wellbeing achievements, but it also looks at this person’s wellbeing freedom, which is reflected in the extent of its opportunities, that is, the size of its capability set. The opportunity aspect of freedom relates to what an individual values as desirable development outcomes for themselves. In this regard, wellbeing freedom should be distinguished from the freedom involved in the process itself, which corresponds to an individual’s agency freedom (Sen 2002a).

*“The importance of the agency aspect relates to the view of persons as responsible agents. Persons must enter the moral accounting by others not only as people whose wellbeing demands concern, but also as peoples whose responsible agency must be recognised” (Sen 1985b:204).*

Overall agency occurs notably when wellbeing is supplemented with commitments or actions that are not necessarily beneficial to the agent itself. The existence of agency is manifest, for instance, in comparing the cases of two persons suffering from hunger, as the result of unfulfilled functionings. One might be in this situation because of a lack of opportunities while the other may be in this situation voluntarily, e.g. if he or she chooses to fast to lose weight. Although the second person voluntarily decides not to achieve his or her functioning to eat, he or she might still have the freedom to do so. Sen’s vision of wellbeing based on functionings, freedom and agency is therefore closer to Aristotle’s Eudaimonia than it is to the hedonist, happiness-



centred vision advanced by utilitarianism (Ransome 2010).

In addressing the relationship between resources or commodities and functionings, and how access and use of the former might lead to an increase of the latter, three groups of conversion factors are identified (Robeyns 2005):

- Individual conversion factors (e.g. metabolism, physical condition...)
- Social conversion factors (e.g. public policies, social norms...)
- Environmental conversion factors (climate, geography).

Each of these factors determines the rate of conversion of resources into capabilities (freedom and opportunities), which in turn increases the choices available to a person to achieve functionings (outcomes) (Austin 2016; Yap & Yu 2016). The CA implies that public policy should focus on these conversion factors and facilitate the transformation of means into functionings. However, it also suggests that individuals should not merely be treated as passive recipients entitled with rights, but that they should be able to exert their freedom on the process(es) of intervention that are generated through these policies. Sen further adds that the achievement of this freedom is ideal, and may entail the possession of a set of pre-existent elementary capabilities by individuals, such as the ability to read and write (basic education), to be well informed (free media) and to participate freely (elections, civil rights...) in the political arena:

*“The CA entails a key normative argument that social arrangements should aim to expand people’s capabilities, that is, their freedom to undertake or achieve valuable doings and beings and in doing so those arrangements should respect*

*people's agency" (Deneulin & McGregor 2010:504).*

The concept of freedom adopted by Sen (1985b) is therefore plural, containing effective power as well as procedural control. Effective power entails a person's freedom to achieve one outcome or another without considerations for the mechanisms and procedures of control. Procedural control, on the other hand, implies control over the process of choice, whatever the outcome(s). The interdependence of social living suggests that it is not possible to exercise procedural control on all liberties, and that effective power should indeed be considered in terms of what members of the group would have chosen. A parallel could be drawn between effective power and an efficient representative democratic system, where the general population exerts effective power, electing representatives to carry out their wishes, whilst delegating procedural control over the implementation of their wishes to these same representatives<sup>10</sup>.

### ***2.3.2 Theoretical Strength of the Capability Approach***

The CA proposes a holistic approach to development, wellbeing and justice, and looks at the links between material, mental and social wellbeing, as well as the economic, social, political and cultural dimensions of life (Robeyns 2005). However, whilst

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<sup>10</sup> Looking into the literature, it is possible to unfold the concept of power into a richer set of experiences, or levels of empowerment that extend beyond effective power and procedural control. These levels include *power over*, *power with*, *power to*, and *power within* (Veneklasen et al. 2002). *Power over* represents the ability to have a subordinate accomplish an action desired by the bearer of power. It is associated with force, and threat. Another form, *power with*, occurs when a common ground is established, for instance through negotiation, and when collective strength is achieved. *Power to* is the ability of an individual to shape his/her own life and world, and constitutes a prerequisite to the exercise of power with. Lastly, *power within* corresponds to a deeper form of empowerment, a sense of self-worth and self-knowledge.

convincingly addressing some of the limitations of objective lists and subjective (utilitarian) approaches, the question of whether the CA could evolve into a theory of social justice remains a matter of discussion. This debate is notably manifest in the differences between Sen and Nussbaum's positions.

*"[Sen's work] lies closer to those fields and paradigms that are characterized by parsimonious, formal, non-narrative, and axiomatic modelling. Nussbaum's work, on the other hand, is much closer to traditions in the humanities, such as narrative approaches" (Robeyns 2005:104).*

Two different strands, or traditions coexist within the approach, depending on whether researchers and practitioners follow Sen's economic and empirical reasoning or, instead, if they endorse Nussbaum's efforts to better understand people's aspirations, motivations and actions. The ramifications of Sen and Nussbaum's respective positions extend to the very notions of opportunity, capability, as well as to the extent of the role of the government. Yet it is the question of the list that best symbolises their contrasting views.

Nussbaum's (2000) focus on quality of life has led her to produce a list of central human capabilities about which, she contends, there can be overlapping consensus. Her list features 10 categories, including (1) life; (2) bodily health; (3) bodily integrity; (4) senses, imagination and thought; (5) emotions; (6) practical reason; (7) affiliation; (8) other species; (9) play; and (10) control over one's environment. One of her main arguments supporting the list approach is that it recognises that some capabilities are better than others, whilst under Sen's approach, she argues, any capability could be presented as being valuable, including those that harm others

(Nussbaum 2003). This critique echoes one that was already made about subjective wellbeing measures and the risk of perverse or offensive tastes going unchallenged. In response to this, Sen has argued that:

*“[L]ists of capabilities have to be used for various purposes, and so long as we understand what we are doing (and in particular that we are getting a list for a particular reason, related to a particular assessment, evaluation, or critique), we do not put ourselves against other lists that may be relevant or useful for other purposes” (Sen 2004:79).*

Sen does not disagree with the affirmation that some capabilities might be superior to others, nor does he reject the content of Nussbaum’s list *per se*, but he challenges Nussbaum’s claim that a universal list is needed. For Sen, lists serve purposes and must be used accordingly (they should be flexible). His position differs from Nussbaum’s in that he does not consider it is the task of the theorist to determine a list of capabilities, arguing that this would be paternalistic, and “deny the possibility of a fruitful participation on what should be included and why” (Sen 2004:77). If such a list of capabilities has to be assembled, he argues, it is the task of the democratic process. He adds that public discussion can help increase the understanding of the value and role of specific capabilities (Sen 2002b). Robeyns (2005) suggests however that it is not clear how these processes of public reasoning and democracy should take place and fair representation guaranteed.

It can therefore be argued that the CA constitutes a set of ideas rather than a full-fledged theory of social justice. Several authors have described the approach as useful for exploratory research or the study of outcomes, processes, and individual beliefs

and wills (Andersson et al. 2012; Hatakka & Lagsten 2012). But the question of how to operationalize these ideas into a practical framework that can be applied to situations is another point of discussion among scholars and practitioners. Two of the most recent frameworks that elaborate on the CA to evaluate the impact of ICT interventions in marginalised and Indigenous settings are discussed in the following subsection. These are the *Choice Framework* by Kleine (2013), and the *ICT Impact Chain* by Gigler (2015).

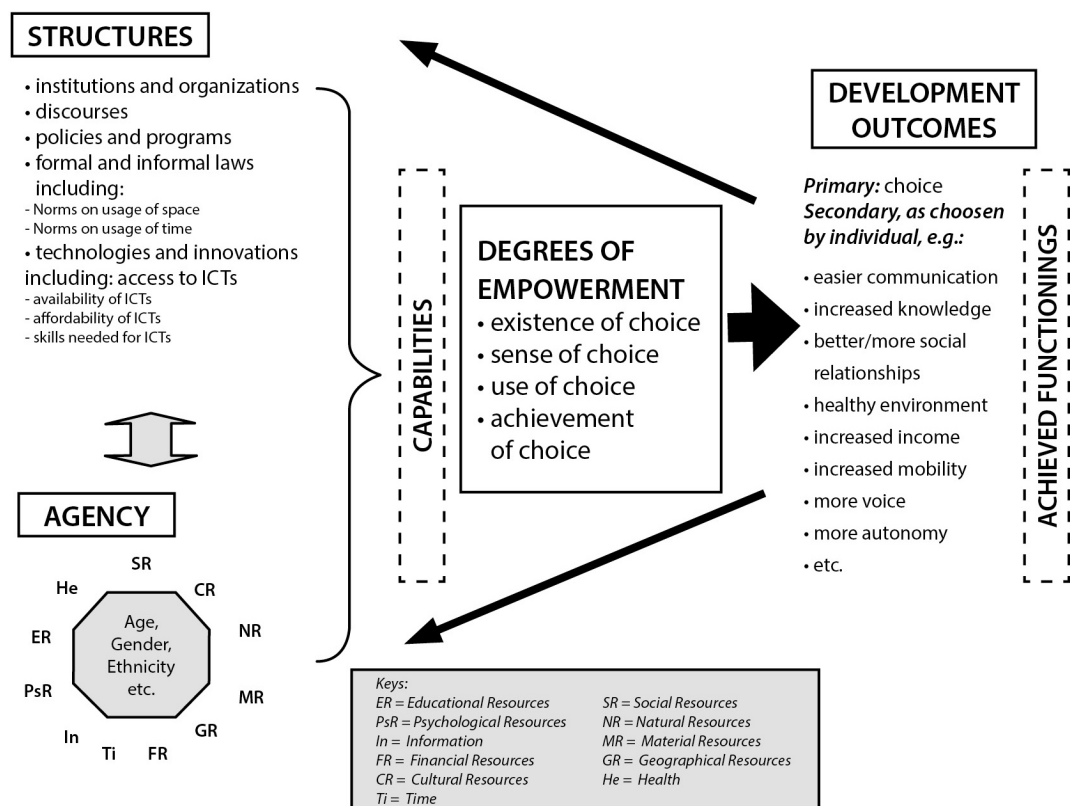
### ***2.3.3 Operationalizing the Capability Approach: The Choice Framework and the ICT Impact Chain***

#### ***The Choice Framework (Kleine 2013)***

The development of the Choice Framework, as a tool for the analysis of the impact of ICT4D interventions, is part of a series of efforts to operationalize the capability approach (Kleine 2010, 2011, 2013). The framework was originally developed during a study on the impacts of a government-led ICT intervention on the wellbeing of a local community in a small town in Chile. It has since been used by several researchers and practitioners in various parts of the world (see for instance Ariztía et al. 2014; Chew et al. 2015; Coelho et al. 2015). It follows a vision of development as a systemic process made of interrelated components and which requires an approach that is holistic and people-centred. The framework builds on the empowerment framework of Alsop and Heinsohn (2005), which is articulated around a structure-agency dialectic, linked to empowerment and development outcomes. It further draws on and extends the idea of a capital portfolio from the Sustainable Livelihood Framework (SLF) (DFID 1999).

*“The choice framework [...] maps the process of how individuals can, with the help of their resource portfolios, negotiate a social structure in order to achieve, by means of their active choices, the development outcomes they aspire to” (Kleine 2013:45).*

In accordance with Sen’s affirmation (1999:36) that the expansion of freedom is both the primary end and the principal means of development, the framework identifies *choice* as the manifestation of the existence of capabilities (Figure 5). The process then associates development outcomes to achieved functionings. These are aggregated in a non-exhaustive list representing the realisation of an individual’s choices as to what life he or she values.



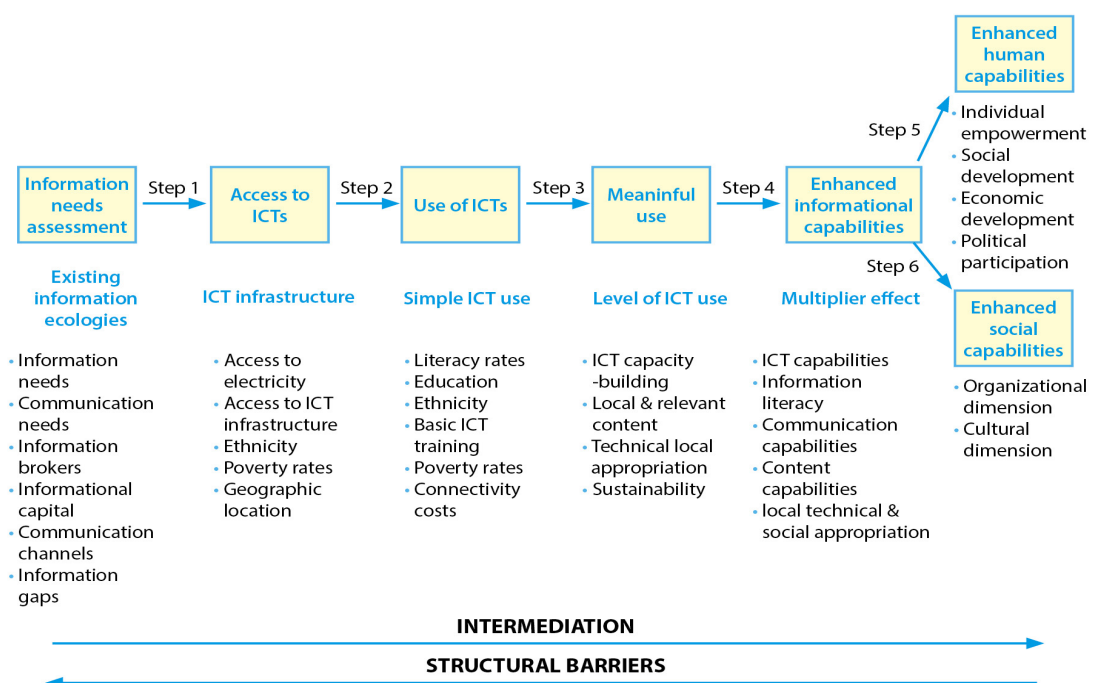
**Figure 5 - The Choice Framework (Kleine 2013)**

The framework challenges the orthodox methodologies of development practice in that it fundamentally questions the validity of outcomes that are defined a priori and without consulting individual participants and beneficiaries (Kleine 2013). In other words, the approach helps address an issue with many evaluation frameworks: that of limiting an evaluation to whether the intervention has met previously specified results or not, which arguably only provides a partial vision of its actual effects. Such evaluations create a risk of overlooking unplanned impacts, positive or negative, which may nevertheless be relevant for assessing how an ICT intervention affects wellbeing. In addition, the evaluation of the impacts of ICT interventions is not conceptualised as a linear cause and effect chain. Instead their effects are carefully disaggregated and their systemic interrelatedness and co-causality demonstrated. The framework itself includes room for ongoing analysis of the effect of achieved functionings on structure and agency in a circular, systemic way.

Kleine (2009) admits that in attempting to model complex relationships between agency, structure, degree of empowerment and development outcomes, the framework may lack depth in theorising each element. Another limitation concerns the framework's focus on individuals and the effect of ICT interventions on their personal capabilities. As a consequence, the framework struggles with articulating the relationship between individual and collective capabilities. This point, which has particular relevance for this research, is further explored in the following subsection. Lastly, the Choice Framework also stays relatively silent on the process behind the identification of desirable capabilities, seemingly leaving this role to individuals.

## *The ICT Impact Chain (Gigler 2015)*

The ICT Impact Chain constitutes another attempt at operationalizing the capability approach. It was designed during a multi-year study aimed at evaluating the impact of ICT use in Indigenous communities in rural Bolivia, carried out with the support of the World Bank (Gigler 2004, 2011, 2015). The framework examines the key factors that must be met to enable marginalised Indigenous communities to have real and meaningful access to ICT, and to allow them to harness and appropriate these technologies for their economic and social development (Figure 6). It suggests that the relationship between ICT and development can only be indirect and non-linear, and claims to use a multidimensional, information-centric approach, which accounts for the constitutive plurality of human life and emphasises the non-material aspects of wellbeing (Gigler 2015:15).



**Figure 6 - ICT Impact Chain (Gigler 2015)**



According to Gigler (2015), the most critical factor for enhancing wellbeing with ICT is to enhance the *informational capabilities* of users, which in turns increases their ability to make a meaningful use of ICT in the social, economic and political aspects of their lives. Informational capabilities encompass four different elements, including information literacy, ICT capability, communication capability, and content capability. These are defined as follows:

- Information literacy: the ability to find, evaluate, and use various sources of information (Zurkowski 1974).
- ICT capabilities: “a set of skills and understandings required by people to enable meaningful use of ICT appropriate to their needs” (Oliver & Tower 2000:384).
- Communications capability: the ability to effectively communicate with friends, family and professional contacts.
- Content capability: the ability to produce and share local content with others through the network. This capability is particularly important for Indigenous peoples due to their strong demand for local information, and the lack of local internet content in many rural communities.

Gigler (2015) suggests that to evaluate the impact of ICT on wellbeing, one must place the process of how ICT is being introduced at the heart of the analysis. Communities need to appropriate ICT if these technologies are to enhance their wellbeing:

*"Local communities need to control the process of introducing and appropriating ICTs into their communities" (Gigler 2015:392).*

The ICT Impact Chain follows a similar philosophy as the CA, although without directly using all of its conceptual elements: It proposes a systematic chain of events made of successive steps, but it does not make a clear separation between the concepts of agency, capabilities and functionings. It has a clear focus on the development of informational capabilities as being the ultimate goal of ICT interventions, and constituting a necessary step for building enhanced human and social capabilities. In that sense, it is closer to a Nussbaumian approach to the CA, with an explicit reference to a list of ICT-related capabilities. Other noticeable characteristics of the ICT Impact Chain include implicit feedback loops informed by processes of intermediation and structural barriers, as well as a reference to, and a measure of, collective capabilities, which perhaps reflects the fact that it was specifically designed to assess the impact of ICT interventions on the wellbeing of Indigenous communities.

### ***2.3.4 The Capability Approach and Indigenous Wellbeing***

In Latin America, the notion of Indigenous wellbeing has notably been popularised in the concept of *Buen Vivir*<sup>11</sup>. This Indigenous philosophy, based on ancestral Andean culture and values, argues that *society* and *nature* are not dual but relational (Gudynas 2011; Villalba 2013). Wellbeing therefore consists in preserving harmony between human beings and the natural environment, including all other living creatures. Buen Vivir is, as Walsh (2010) puts it, “a system of knowledge and living based on [...] the spatial-temporal-harmonious totality of existence” (Walsh 2010:18). It can however not be interpreted as constituting a standard of reference for all

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<sup>11</sup> Also known as *Sumak Kawsay* or *Suma Qamana* in the Quechua and Aymara Indigenous languages.

Indigenous groups and societies. Instead, it acknowledges the variety of cultural and ecological experiences, and the differing priorities that derive from them (Gudynas 2011). In short, it is an openly plural platform of concepts, which supports the affirmation of endogenous, eco-centric, and relational visions of wellbeing.

One element of interest for this research therefore concerns the relationship between the CA and Indigenous wellbeing. This question is becoming increasingly relevant as many researchers and practitioners are tempted to use or have begun using the approach, generating what Bockstael and Watene (2016) describe as a *growing conversation*. The question of the compatibility between Indigenous philosophies and the foundations of the CA is notably discussed in Merino Acuña (2015), Murphy (2014) and Watene (2013), and bridges are also built between the CA and Indigenous rights fields (Panzironi 2009, 2012). Furthermore, an expanding body of fieldwork uses the concepts of capabilities and functionings in Indigenous settings in Latin America (Ariana 2012; Bockstael 2015; Merino Acuña 2015; Stenn 2013; Ytrehus 2015) as well as in other parts of the world (Klein 2015; Kosko 2011; Schischka 2012; Vaughan 2010, 2011; Yap 2012).

From the perspective of Indigenous communities, the legitimacy of the CA is largely dependent on whether it can accommodate Indigenous worldviews and advance their own wellbeing priorities and indicators. It would need to recognise that autonomy and self-determination both constitute central features of Indigenous wellbeing, and enabling components for achieving other aspects of Indigenous conceptions of the good life. This argument, which supports a devolution of effective power and procedural control to Indigenous peoples, is integral to the UN Declaration on the

Rights of Indigenous Peoples (United Nations 2008), and is similarly accepted by some in the academic literature (Binder & Binder 2016; Bockstael & Watene 2016; Murphy 2014; Yap & Yu 2016).

In this regard, it could be argued that the principles of freedom and agency, as theorised by Sen, and his reliance on the democratic process for setting up lists of locally relevant capabilities provide satisfying grounds for the application of the CA to Indigenous contexts. Binder and Binder (2016) advance four arguments to further support this compatibility:

- The inclusion in the CA of non-market goods in a person's overall resource endowment recognises a crucial aspect of Indigenous subsistence in exchange societies;
- There is room for depicting the differences in the significance of goods via conversion factors within the CA. To illustrate this, they suggest that traditional knowledge can be conceptualised as a social conversion factor allowing people to derive a larger variety of capabilities from certain goods;
- The CA does justice to Indigenous value systems, by recognising, e.g. the special importance they ascribe to their ancestral territories.
- It leaves Indigenous peoples free to decide for themselves the life path they value.

In spite of this apparent compatibility, Bockstael and Watene (2016) observe that Indigenous scholars and development practitioners have had little engagement with the CA so far. One possible limitation concerns the technicality of the approach. The fact that it consists in general guidelines rather than in a very specific framework

makes it particularly flexible for the integration of context-specific priorities.

However, there are practical constraints in operationalizing the CA on the ground.

The frameworks developed by Kleine and Gigler have a certain level of technicality that may disserve them in their application to real-world situations. Their experiences have shown that applying these frameworks can lead to rather lengthy and resource-intensive studies. This raises question on their practicability for researchers and practitioners who do not operate under the umbrella of large, or resourceful organisations, but who nevertheless need instruments for evaluating ICT interventions in Indigenous contexts.

A more concerning limitation concerns the liberal values that underpin the CA, which translate in its focus on individual wellbeing (Deneulin & Stewart 2002), according to which everything can be explained by reference to individuals and their properties (Robeyns 2005). It is however understood that relationships and community are vital components of Indigenous wellbeing, and the needs of individuals may not always dominate over the wellbeing of the community as a whole (Deneulin 2012; Walsh 2010), or indeed, on the relationship between this individual, the community, and other living beings (Gudynas 2011). It has for instance been argued that freedom must be comprehended in relation to its *telos* or its aim, which encompasses both the good to oneself and to others, including future generations (Deneulin & McGregor 2010). The CA, however, struggles to give adequate importance to such relationships. Sen's (2002) response to his critiques has been that it would be artificial to want to separate individuals from their surroundings:

*"[N]o individual can think, choose, or act without being influenced in one way or another by the nature and working of the society around him or her" (Sen 2002:80).*

In defence of Sen, Robeyns (2005) claims that the individualism of the CA is ethical rather than methodological, and that individuals are ultimately what matters morally. For Ibrahim (2006), Sen still puts too much emphasis on individual capabilities, arguing that he "acknowledges the importance of social structures only so far as they influence individual well-being and freedom" (Ibrahim, 2006:402). This marginalisation of the collective in favour of individual wellbeing may pose a serious caveat to the application of the CA to Indigenous contexts, and raises legitimate concerns on whether it would contribute to reinforce Indigenous self-determination, or instead, if it would contribute to perpetuate the relations of domination and exploitation dominant in the system (Ruttenberg 2013). Speaking about mountain communities in Mexico and other parts of Latin America, Barkin (2012) points out:

*"If these societies are to liberate themselves from the globalised straightjackets imposed by international economic integration, with its imperatives of "free" trade and markets, communities have to expand beyond individual capabilities and the exercise of individual freedoms" (Barkin 2012:512).*

Several authors have therefore sought to build on and enrich the CA by exploring the relationship between individual and group capabilities (Evans 2002; Stewart 2005), proposing to help define collective capabilities (Ibrahim 2006) or communal wellbeing (Deneulin 2004). Yet the question remains whether an evaluation framework based on a philosophy that is essentially anthropocentric and

individualistic in its conceptualisation of human wellbeing, could appreciate the full expression of an Indigenous, relational and eco-centric worldview as the one proposed by Buen Vivir.

Lastly, another observation points to the lack of specific guidance on how to organise the democratic procedures for selecting the desired capabilities and functionings, as well as the indicators for measuring them. This notably interrogates the role of the evaluator in the process of intervention, its values, worldviews and responsibilities, and how these translate in the conceptualisation of, and the practical application of an evaluation framework based on the CA. In other words, these frameworks are quite silent on the role of evaluators, i.e. their own influence on the process of intervention, and the responsibility that derives from it. In the next section, I argue that any framework for evaluating the impact of an intervention on Indigenous wellbeing ought to benefit from a critical reflection on the existence of differing perspectives, and structural relations of power, dominance and exploitation (Ruttenberg 2013). Building on the valuable concepts and ideas developed in this section, the following section proposes to explore the potential contribution of critical systems thinking, pragmatism and action research, and to harness some of their methods and tools as a way to address issues of practicality, perspective and positionality, including embedded power relationships, in the evaluation of ICT interventions on Indigenous wellbeing.

## 2.4 ICT4D: Systemic Inquiry and Action Research

### **2.4.1 Developing Holistic Understanding: The Three-Legged Stool of Systems Thinking**

*“With systems thinking the belief is that the world is systemic, which means that phenomena are understood to be an emergent property of an interrelated whole” (Flood 2010:269).*

According to Flood (2010), thinking *in* systems suggests that valid knowledge comes from developing whole pictures of phenomena rather than from breaking them into parts. It favours approaches for identifying emergent properties, using systemic frameworks “for understanding interrelationships rather than things” (Senge, cited in Alter 2004:758). Systems thinking is sometimes described as having gone through three successive waves, which have progressively built on previous work and developed into a rich set of systems theories (Midgley 2000) and methodologies. These waves include *hard* systems thinking, the historical ground and largest body of literature in systems thinking; *soft* systems thinking; and, more recently, *critical* systems thinking.

Responding to differing ontologies and epistemologies, each of these waves also has its preferred methodologies and tools. *Hard* systems, for instance, brings ideas from applied sciences and psychoanalysis and uses mainly empirical approaches and quantitative methods to build systems as images of reality, thereby existing independently from the human observer (Bateson 1972; Von Bertalanffy 1968). Examples of the use of hard systems approaches in ICT4D include first-order cybernetics and systems dynamics (Kivunike et al. 2014; Krasnikova & Heeks 2003;



Murthy et al. 2010; Pande 2003; Pitula & Radhakrishnan 2011; Popova 2012a, 2012b; Sutinen & Tedre 2010; Uimonen 2015).

Influenced by constructivist ideas, *soft* systems thinkers argue that, instead of representing reality, systems are only constructs to aid understanding (Ackoff 1981; Checkland 1981; Churchman 1979). Soft systems draws on phenomenology and interpretive sociology, as well as critical research to come to shared system goals (Röling 1997). It recognises that the social world is complex, problematical, mysterious and characterised by clashes of worldviews (Checkland & Poulter 2006:22). Soft systems approaches have notably been used in ICT4D by Bell & Wood-Harper (2007); Gunawardena & Brown (2007); Heeks (2002); Nicholson & Babin (2011); Turpin et al. (2009); Turpin et al. (2013), Walsham et al. (1988).

A third wave, critical systems thinking, has emerged as a response to what was presented as the limitations of hard and soft systems approaches. It suggests that these approaches miss a critical reflection on the goals attained – in the case of hard systems – or on the nature of the consensus achieved and the changes brought about – in the case of soft systems. Such reflection can be attained through a process of reflective practice, also called boundary judgment (Jackson 1982; Mingers 1980; Ulrich 1983), and the use of multiple methodologies (Cordoba & Midgley 2006; Nepal & Petkov 2002; Petkov et al. 2006; Petkov et al. 2007; Petkov et al. 2008). This last approach draws on the critical theory of knowledge-constitutive interests (KCI) of Jurgen Habermas (1972) and, I argue, provides an avenue for better evaluating the impact of ICT interventions on Indigenous wellbeing.

Habermas suggests that a connection between logical-methodological rules and knowledge-constitutive interests can be demonstrated in three categories of processes of inquiry: the empirical-analytic sciences; the historical-hermeneutic sciences; and the critically-oriented sciences. A *technical* interest structures the modes of inquiry of empirical-analytic methods, following a deep motivation we, as humans, have in the prediction and control of the natural environment, or “in the possible securing and expansion, through information, or feedback-monitored action” (Habermas 1972:309). In other words, it seeks to answer questions such as what is happening, and how is it happening. A second, *practical* interest for possible action-orienting mutual understanding drives the historical-hermeneutic sciences. It is based on the argument that, in hermeneutic knowledge, it is the understanding of meaning, not observation, which provides access to the facts. This practical interest is therefore about understanding why something is happening and what it means. Lastly, Habermas recognises the importance of analysing power and the way it is exercised to understand past and present social arrangements (Jackson 2000). The exercise of power is seen as a force akin to preventing the open and free discussion in the pursuit of knowledge. An interest based on *emancipation*, therefore aims to free human beings from constraints imposed by power relations or, to paraphrase Habermas:

*“[To determine] when theoretical statements grasp invariant regularities of social action as such and when they express ideologically frozen relations of dependence that can in principle be transformed” (Habermas 1972:310).*

When they are taken together, these three - technical, social and ethical - dimensions distinguish a critical systems approach from other ways of dealing with complexity (Hummelbrunner 2011). In other words, framing evaluations in systemic terms suggests focusing on understanding interrelationships, engaging with multiple perspectives and reflecting on boundary decisions (Reynolds & Holwell 2010). Each of these aspects corresponds to a different leg of what could be metaphorically described as a critical systems thinking stool:

- Interrelationships: this concept focuses on understanding how things are connected, by what, to what and with what consequences.
- Perspectives: interrelationships are not neutral and give way to different interpretations – perspectives - that need to be acknowledged and explored.
- Boundaries: perspectives expressed as systems of interest are bounded entities subject to the expression of power. The boundary, which determines what is relevant and what is not, is traced by the dominance of some perspectives over others.

It should be noted, however, that the philosophy behind Habermas' KCI theory and critical systems thinking is denounced by certain systems thinkers. These critiques concern notably a presumed anthropocentric bias of KCI. For Midgley (2000), the fact that Habermas describes the relationship between humans and the environment as one of prediction and control means that it is likely to reinforce assumptions that the natural world is a resource for human control and consumption. He also adds that the idea of an emancipatory interest as being necessarily pursued during interventions

resembles the idea of human kind's supposed march of progress. However, for Reynolds (2002) Habermas only seeks to remind us that whilst we may share compassion and solidarity with regards to nature, we can never engage nature or living things as equal partners in practical discourse. For Ulrich, this is simply a non-question:

*"The question is not whether we are anthropocentric, but only how critically we deal with the fact that we are" (Ulrich 1993:596).*

The critical views developed in Habermas' KCI theory, and in the critical systems thinking tradition, share the same distrust towards informational constraints in the formulation of knowledge, as the capability approach does in moral analysis. It argues that favouring certain methodologies and ignoring others may favour knowledge of one dimension at the detriment of the two others. Applied to the field of international development, it suggest, for instance, that focusing too much on how to generate better conditions for economic growth, whether through state interventionism or market-based mechanisms might cast a shadow on underlying assumptions, which equally need questioning and challenging. These questions might interrogate the necessity of pursuing economic growth at the detriment of the preservation of ecosystems, or seek solutions to address rising inequalities.

#### ***2.4.2 Recognising the Role of the Evaluator***

Using a critical systems thinking approach has implications on how the role of the evaluator is conceived. One of critical systems thinking's premises is that evaluators are not remote observers; they are part of the situation of interest they are trying to

make sense of, and thereby influence it. Consequently, just as the evaluation of an intervention's systemic impacts might reveal diverging or competing perspectives and interests among stakeholders, the researcher or practitioner taking part in an evaluation process also engages in the production of its own perspective. This perspective might compete with that of other stakeholders, in particular if a non-Indigenous evaluator operates in an Indigenous context. The position of the evaluator, his/her worldview, prejudices and actions should therefore not be considered as being remote from the object of evaluation, but should be treated as an intervention in itself, equally requiring evaluation. A *systemic* evaluation would therefore recognise the existence of mental patterns influencing the evaluator's perspective on the situation being examined. Such an approach would require evaluators to practice humility and empathy in their practice, that is, to be aware of assumptions, mental models and values and to explicitly engage in a process of reflexive practice.

Reflexivity is sometimes confused with reflection. To distinguish them, Finlay (2002) argues that both practices can be viewed on a continuum. On one end, the reflection process consists in *thinking about* something, after it has occurred. It is the process of reflecting about one's experiences (Fook & Gardner 2007). Its philosophical foundations are located in the seminal works of John Dewey (1910) and Donald Schön (1983). According to Ortlipp (2008), such reflection can be critical when it helps understand and challenge the validity of assumptions, thereby revealing the constructed nature of research outcomes. On the other end of the continuum, reflexivity participates to a more immediate, dynamic and subjective self-awareness (Finlay 2002). Both reflection and critical reflection are part of a reflexive practice of

making explicit one's own contribution to the research process (Flick 2014; Heron & Reason 1997), that is, the researcher's working hypotheses, motivations and status within the social context (Levy 2003). Incidentally, this exercise helps evidence the structural role of power in the relationship between the researcher and the researched, a clarification that has particular importance when conducting research in Indigenous communities:

*"For scholars working in this field, research conducted within an Indigenous context requires an understanding of the myriad and overlapping ways in which the pursuit of research is a project full of power dynamics, colonization, [and] knowledge appropriation" (Cunsolo Willox et al. 2012:129).*

Applied to ICT interventions in the implementation or in the evaluation phase, I argue that critical systems thinking approaches can contribute to generate a deeper understanding of, and *among* the stakeholders involved, including the intervention's victims, as well as the social mechanisms at play, and to facilitate decision-making. More generally, systems thinking methodologies constitute a good starting point for addressing the specific requirements for evaluating ICT interventions with regards to their impact on Indigenous wellbeing, in particular the need for a culturally-sensitive approach, which favours the emergence of mutual understanding, and addresses both individual and collective wellbeing needs.

### **2.4.3 Transforming the Situation: Action Research and Participation**

Revealing the positionality of the evaluator in the situation of interest might also challenge ideas on the role of evaluation, and the influence such evaluation might

have on the situation being evaluated. If the act of evaluating is inevitably going to have an impact on the situation of interest, don't evaluators have a duty to ensure that this impact improves the situation? This invites a reflection about responsibility and ethics: in designing models for evaluating the impact of ICT interventions on Indigenous wellbeing, it suggests that evaluators should aim to increase their success and sustainability, e.g. by proposing new avenues for adapting the intervention to evolving circumstances or needs. The design of such adaptive evaluation frameworks may provide a useful shift towards a systemic evaluation practice, which would include feedback to practitioners to inform adaptive development, helping them to make decisions about what to change, expand, close out or further develop (Patton 2010, 2011, 2016; Williams & Hummelbrunner 2011). This dynamism and adaptability is also what characterises frameworks building on action research (AR) and pragmatism.

Instead of following a linear process of intervention, AR uses data feedback in a cyclical process to increase understanding of a given or evolving social situation. As a methodology, it first appeared in the work of Kurt Lewin (1946) in mid-twentieth century USA. Although deriving from a different philosophical tradition, action research has been closely associated with systemic approaches (Flood 2010; Flood & Romm 1996; Levin 1994; Reynolds 1998; Ulrich 1996; Wilby 1996, 1997). Ison (2010) even argues that action research can be systemic, so long as:

*"[T]he researcher understands and acts with awareness that they are part of the researching system of interest under co-construction rather than external to it"*  
(Ison 2010:274).

Action research has its roots in pragmatism (Baskerville & Myers 2004), a philosophical tradition that emerged in the USA in the second half of the 19<sup>th</sup> century. Action and change are central concerns in pragmatism, as well as the interplay between knowledge and action (Goldkuhl 2012). Pragmatism suggests that human thought can only be revealed in human action. In other words, it is in the consequences of human action that the true meaning of a human conception can be found. Baskerville and Mayer (2004) argue that its roots in pragmatism has several practical consequences for the conduct of action research:

- *Plan:* First, it creates a necessity to establish beforehand the purpose of action, i.e. to clarify the concepts and explicate the theoretical purpose underlying the action;
- *Act:* Second, it requires that a practical action be taken in the problem setting;
- *Evaluate:* Third, this practical action must then inform the theory, leading to adjustments in the theory according to the action's outcomes.

The repetition of these stages creates a dialogue between thinking and practice, which characterises action research, and allows it to react dynamically to unforeseen circumstances, or to changing perceptions and needs.

The use of action research in Indigenous contexts is also justified by ethics. The work of Paulo Freire on the theorisation of participation in pedagogy and the influence of post-colonial theories on action research have contributed to developing a branch of AR called Participatory Action Research (PAR) (Freire 1970a, 1970b, 1982; Hall 1982, 1985; Swantz 1982; Vio Grossi 1982), which Glassman and Erdem (2014) describe as



a way to throw off the "intellectual, social and material shackles of colonialism" (Glassman & Erdem 2014:207). Paolo Freire argued that the oppressed could not be liberated without their reflective participation as their apparent liberation would result in treating them as objects that can be manipulated (Freire 1970a:47). He suggested that humanism requires cooperation, and that can only be achieved through trust, confidence and communion with the people. PAR therefore combines four main characteristics: (1) it is participant-driven; (2) it follows a democratic model; (3) it is collaborative at all stages (Whyte 1991); and (4) it is intended to result in concrete action or change that will directly benefit the marginalised participants (Pain et al. 2011).

There are several examples of applications of AR and PAR methodologies in the field of ICT4D (Attwood et al. 2013; Beardon et al. 2004; Bell 1996; Braa et al. 2004; Braa et al. 2007; Karanasios 2014; Lennie & Tacchi 2007; Mchombu 1995; Mosse & Nielsen 2004; Raihan et al. 2005). As with other frameworks, PAR is not exempt of criticism. While there seems to be support for researchers to move from their ivory tower to the role of facilitators, its critics denounce the difficulty to achieve this in practice. Some focus on the process behind participatory action research, arguing that many PAR interventions are tainted by the inappropriate application of methods, poor training of researchers, inadequate time in the field, weak research relationships and shallow participation (Ozanne & Saatcioglu 2008:434). Looking at ICT4D interventions, Heeks (2008) suggests that participation often involves a small, local elite minority who tends to give the answers they think designers want to hear. Others also highlight the risk of the illusion of participation, with concerns that such approaches might be masking power relations to follow business as usual models

(Kothari 2001; Waddington & Mohan 2004). Kapoor (2005) warns that complicity and desire are written in participatory development, and that it is therefore prone to "exclusionary, Western-centric and inegalitarian politics" (Kapoor 2005:1204). For White (1996), it is the absence of conflict that should raise suspicion:

*"if participation means that the voiceless gain a voice we should expect this to bring some conflict (...) Change hurts!" (White 1996:6).*

This suggests that, whereas participatory action research may offer a context-sensitive, empowering, and dynamic approach for carrying out and evaluating ICT4D interventions in Indigenous settings, its implementation remains at risk of overlooking embedded power relations, which may undermine the very foundations on which PAR was built: that of providing an emancipatory and adaptive approach to research and practice. This section has however shown that action research and systems thinking communities share common traits. Both communities depart from a focus on how professionals intervene in real world problems (Levin 1994) and both consider power issues to be a central concern that prevents interventions from meaningfully impacting society. In this regard, the use of critical reflection as a way to unveil hidden power relations remains much needed.

## 2.5 Conclusion

In this chapter, I have introduced the concept of wellbeing and explored the predominant relevant approaches informing wellbeing evaluation, including universal (objective lists) and utilitarian (desire/preference satisfaction and subjective wellbeing) theories, as well as the increasingly influential capability approach. Through an analysis of two ICT4D evaluation frameworks that have built on the capability approach, I have pointed the strengths of the approach for shifting the focus of ICT4D evaluation from an exclusive focus on technology access and use, towards understanding their multidimensional development outcomes, including their impact on wellbeing, whilst recognising their possible limitations in appreciating multiple perspectives and the risks of power imbalances in ICT4D interventions in Indigenous settings. I have then explored the potential contribution of critical systems thinking, pragmatism and action research traditions for further strengthening the focus on multidimensional development outcomes while improving the practical applicability of ICT4D evaluations, in light of the two main objectives that were proposed in the introduction of this thesis:

- To explore how ICT interventions affect the wellbeing of Indigenous communities in the North Rupununi, Guyana.
- To understand how such interventions might contribute to increasing the wellbeing of Indigenous communities.

The following chapter builds on these traditions to establish the foundations of the systemic inquiry approach which underpins the methodological design of this research, and which have informed my fieldwork and analysis.

# Chapter 3. Research Methodology

## 3.1 Introduction

### 3.1.1 Experience Matters

*“I consider knowledge arises through engagement and reflection as an on-going process, whether or not it is explicitly sought as new knowledge” (Ison 2010:267).*

The epistemological stance followed in this thesis draws on the heritage of Kant (1787), Wittgenstein (1953), as well as on other 20<sup>th</sup> century philosophers of science and according to whom there is an unquantifiable gap between human knowledge, the language used to frame this knowledge, and reality. To paraphrase systems thinker Gerald Midgley, “[W]hatever we know about reality is just that - knowledge [his emphasis], not reality itself” (Midgley 2000:2). Knowledge and understanding about the world are therefore seen as constructions rather than as accurate images of reality. It results from this that the role of the researcher itself, its actions and responsibilities, cannot be abstracted from the construction of knowledge. Just as any other intervention, this doctoral research is influenced by a wealth of experiences, which have shaped my approach, and from which it cannot be disentangled. As suggested by Ulrich and Reynolds (2010):

*“We all bring into [...] interventions a background of personal experiences and skills that shape our views of the context, and it will hardly ever be possible that we render all those background assumptions fully explicit” (Ulrich & Reynolds 2010:288).*

While accepting that it might not be possible to render all those background assumptions explicit, the following section highlights the elements that have been central in conducting this intervention. These include my professional activities and academic network, which have brought me to discover Guyana and informed my decision to carry out this doctoral research in the North Rupununi, as part of Project COBRA.

### **3.1.2 Project COBRA**

Project COBRA was an EU-funded research project which ran from October 2011 to February 2015, and in which I was personally involved, first as Communication Officer working for one of the partner organisations, and then also as Researcher. 'COBRA' is an acronym derived from 'Community Owned Best practice for sustainable Resource Adaptive management'. The project's rationale was to contribute to the empowerment of Indigenous communities in the North Rupununi and the wider Guiana Shield to address the multiple social and environmental challenges facing the region. The project aimed at strengthening the position of local communities as stakeholders, and at facilitating the integration of community owned solutions<sup>12</sup> in development and climate change mitigation policies (Berardi et al. 2013; Mistry et al. 2016).

To reach this objective, the project used a Participatory Action Research (PAR) approach, which engaged a range of end-users in the research process right from the

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<sup>12</sup> The project's definition of a community owned solution was: "practices that are born, developed, and successfully implemented in the community, by the community, without major influence from external stakeholders, and that contribute to social-ecological well-being in a fair and equitable way" (Mistry, Berardi, et al. 2016).

start, building the social capital of the participants and allowing reflection and adaptation throughout the research (Mistry et al. 2014). Central to the PAR approach, was the use of Participatory Video (PV) and Photography (PP). PV can be described as a process that involves a group or community in filming and editing their own videos according to their own sense of what is important and how they want to be represented (Johansson et al. 1999). The use of these methods aimed at enabling local participants and their communities to learn about ICT, take a greater ownership of the research process, present their views, and provide an immediate and accessible dissemination output (Mistry & Berardi 2012:2).

Given the geographical distribution of COBRA partners across several European and South American countries, the use of ICT also shaped the relationships between partners, as a large part of its work took place online and via email. Although less frequent, face-to-face meetings, academic conferences, as well as fieldwork trips - occasionally in challenging conditions - were important events that shaped and consolidated the COBRA team spirit, also creating friendships in its wake.

As discussed in the introductory chapter of this thesis, this inquiry was prompted and, to a certain extent, informed by my involvement in Project COBRA. The centrality of ICT in the project, and the underlying tension it symbolises between tradition and modernity, helped shape my research questions around the contribution of these technologies to the wellbeing of local Indigenous communities. The project also contributed to the emergence of a network of academics and professionals, which was instrumental in facilitating my fieldwork in the North Rupununi. The list below describes how my involvement in Project COBRA influenced this thesis:

- Project-related field trips to the region, in 2012 and 2014 helped form first impressions on the local context, including aspects linked to the social organisation, as well as political, economic and cultural aspects.
- The academic publications produced by the COBRA network throughout the project constituted a pool of knowledge on the region in the fields of human and Indigenous rights, social and political science, communication, economy, geography, and ecology, which has served as an intellectual background for this research (Berardi et al. 2013; Berardi et al. 2015; Mistry, Berardi, et al. 2014; Mistry & Berardi 2016; Mistry, Bignante, et al. 2014; Mistry et al. 2015; Mistry et al. 2016; Mistry, Tschirhart, et al. 2014; Oteros-rozas et al. 2015; Tschirhart et al. 2014; Tschirhart et al. 2016).
- My exposure to the methodology and methods used in Project COBRA, such as PAR, semi-structured interview techniques as well as focus groups contributed to building my experience and informing my choice of methods of data collection.
- The endorsement of my research and administrative support from local partner organisations, i.e. Iwokrama and the NRDDDB allowed me to apply for – and obtain – a research permit from the Guyanese authorities. At the same time, it also contributed access to primary and secondary data.
- While undergoing fieldwork in Guyana, some of the individuals working in these local organisations were an invaluable source of advice and contacts both in the capital Georgetown and in the North Rupununi region.

- Being associated with the well-known and locally endorsed Project COBRA was helpful in terms of legitimising my presence in the North Rupununi and adding trust to my intervention (Bernard 2006).
- The financial support of the project allowed me to travel to the study site at the beginning of fieldwork without having to use limited university funds. During fieldwork, I was able to stay in a small house rented for Project COBRA to the NRDDDB in Bina Hill, where I also shared an office space (with internet access) with the local team. This considerably reduced my accommodation expenses while in Guyana.
- Lastly, I was fortunate to work and stay close to the project's local team in Bina Hill, the headquarters of the NRDDDB. The relationships I continued to develop during fieldwork contributed to improving my cultural awareness and making my experience less lonely and more fulfilling on a personal level.

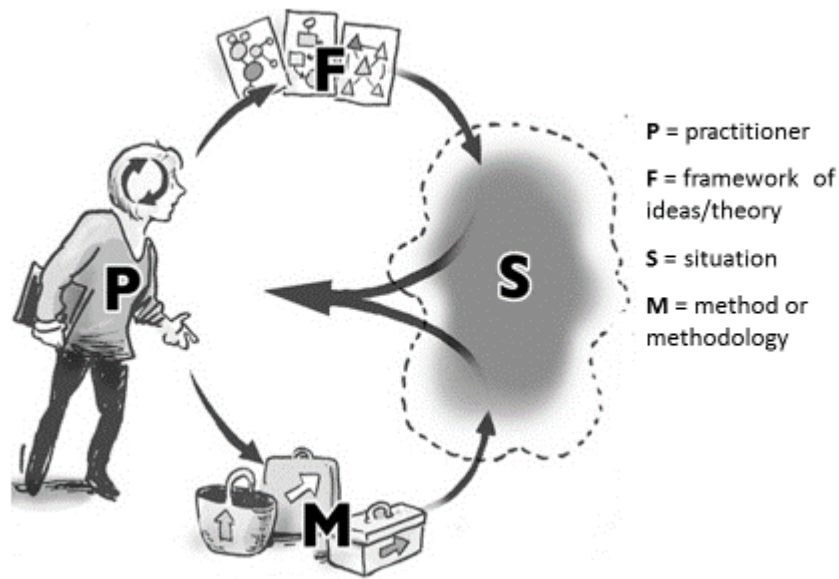
### ***3.1.3 A Systemic Inquiry Approach***

The constructivist epistemology is commonly associated with the practice of qualitative research, which Creswell (1998) describes as an inquiry process of understanding for the exploration of social or human problems. Unlike quantitative research, which draws on empirical-analytic methods to describe and predict phenomena, qualitative research focuses instead on the exploration of meaning and processes. It is concerned primarily with understanding the nature of a problem, the context in which it takes place, and the perspective of those in it (Denzin & Lincoln 2003). As familiarity with the local Indigenous context increases and new insights are



gained, e.g. on their perceptions of the impact of an ICT intervention, qualitative research also encourages the reassessment of research questions, and facilitates the development of new hypotheses (De Walt & De Walt 2010:13). According to Creswell (1998), such an approach can be rigorous, provided that it focuses on certain fundamentals, including evolving design, presentation of multiple realities, e.g. by blending methodological traditions, the positioning of the researcher as an instrument of data collection, as well as a focus on participants' views.

Prior to delving into the methodological framework of this research, it is useful to clarify what is meant by *methodology*, as it is a term used in different ways. Midgley (2000), for instance, defines methodology as the “set of theoretical ideas that justifies the use of a particular method or methods” (Midgley 2000:105). This definition differentiates between a methodology and the actual ‘methods’, which are defined as a “set of techniques operated in a sequence (or sometimes iteratively) to achieve a given purpose.” Another definition, proposed by Ison (2010), describes methodology as the “conscious braiding together of theory and practice in a given situation” (Ison 2010:165). This latter definition challenges conventional wisdom, which regards methodologies as objectified, reified entities that can be taken off the shelf and applied to any situations. In line with the constructivist tradition, Ison’s definition prompts attention to the central role of the researcher in establishing a coherent relationship between theory and practice (Figure 7). The definition, in contrast with Midgley (2000), adds that theory and practice are applied in a given situation. In doing so, Ison highlights the importance of understanding and adapting to the context of intervention, and suggests that the singularity of this context should itself justify the choice of theories and methods.



**Figure 7 - Understanding practice 1 (Adapted from figure 3.5 in Ison 2010:48)**

In the preceding chapter, it was argued that to better understand the impact of ICT interventions on Indigenous wellbeing, evaluation ought to look beyond the questions of technology diffusion, access and use. Instead, it was suggested that ICT interventions should be evaluated as part of a complex reality, characterised by feedback and emergence, contrasting perspectives, embedded power relationships, and leading to multifaceted outcomes featuring social, political, economic and cultural implications. This chapter outlines the methodology that was developed throughout the thesis, and guided the collection, analysis and evaluation of data. Section 3.2 introduces the case study approach, and expands on the role of fieldwork in the overall research design. Section 3.3 outlines the selected evaluation principles derived from soft and critical systems thinking approaches, and the methods adopted for analysing the data. Section 3.4 lists the research methods and techniques for collecting the data before addressing, in Section 3.5 how I managed my own positioning in the research process through self-reflection and reflexivity. Just as the

rest of this doctoral thesis, this research methodology is the result of an iterative, reflective approach. The methodology itself evolved as a result of my engagement with the context of intervention, in a process of experiential learning (Kolb 1976, 1984).

## **3.2 Methodological Framework**

### ***3.2.1 Case Study Approach***

As a method, case study is useful for investigating local perspectives and perceptions and for better understanding social, political and related phenomena. Yin (2014) defines case study in the following terms:

*“An empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin 2014:16).*

Case study has been widely used in ICT4D research, notably to investigate particular projects, such as e-government, telecentres (Huerta & Sandoval-Almazan 2007; Mofleh & Wanous 2008; Rajalekshmi 2007), or the impact of mobile telephony (Jagun et al. 2008). It has also been used to increase understanding of the emergent use of technology in the healthcare system (Constantinides & Barret 2006), or to evaluate ICT use in teaching and learning (Lim & Tay 2003; Yuen et al. 2003). As a recognised method for investigating ICT interventions, one of the strengths of case study is its ability to place such interventions in context, and to appreciate its relationship with the phenomenon under study. This may explain why this method was chosen by both

Kleine (2013) and Gigler (2015) to evaluate the impact of ICT interventions, and to develop their evaluation frameworks.

Guba and Lincoln (1981) identify four purposes of case study: to chronicle, to depict, to teach and to test. Case study shares similarities with history and experiment, in that all three approaches can be used to respond to explanatory types of research questions, usually formulated in terms of *how* or *why* (see Table 3). Unlike history, case study and experiment inquire about contemporary events. But case study differs from experiment in that it is more appropriate to use in real world inquiries, where it is not feasible - nor ethically acceptable (Smith 1999) - to manipulate behaviours systematically.

**Table 3 – Relevant situations for different research methods – Adapted from Yin (2014)**

<b>Method</b>	<b>Form of research question</b>	<b>Requires control of ICT4D intervention?</b>	<b>Focuses on contemporary ICT4D intervention?</b>
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case study	How, why?	No	Yes

Like other research methods, case studies have limitations. Common criticisms include a presumed lack of rigour compared with other methods, as well as the difficulty to generalise from case studies. Yin (2014) argues that case studies can be rigorous, provided they follow systematic procedures and do not allow equivocal elements to influence the direction of the findings and conclusions. Others have argued that case study research requires certain qualities and skills on the part of the

researcher, including initiative, pragmatism and the ability to take advantage of unexpected opportunities (Darke et al. 1998). The use of case studies as part of a wider open inquiry framework including mixed methods may also contribute to ensuring the rigour of the approach, and increase the validity of the findings through triangulation (Eisenhardt 1989). To the criticism about generalisation, Yin responds that “case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes” (Yin 2014:21). In short, the aim of case study research is to provide analytical, not statistical generalisations.

Given the nature of this research, and the singularity of Indigenous contexts and worldviews, this method therefore constitutes an appropriate and necessary component of the methodological framework. This framework rests on four different case studies, which unfold in two different strands of inquiry. The first strand focuses on three third party-led case studies and the second strand on a researcher-led intervention (Table 4). While each strand operates independently from the other, they are also part of an action research exercise of planning, observation, evaluation and action. In this regard, the researcher-led intervention is partly informed by the observations, experiences and understandings gained from the third party-led case studies, which constitute the first strand of inquiry.

**Table 4 - Case study overview**

Type	Intervention	Method	Scale
Third party-led interventions	One Laptop per Family	Case Study	National
	Surama Ecolodge Internet Intervention	Case Study	Local
	Yupukari Library Internet Intervention	Case Study	Local
Researcher-led intervention	Pantani Blog	Case Study/Experiment	Local

### ***3.2.2 Strand 1: Third Party-Led Interventions***

The following bullet points outline the criteria, which were chosen to select the three third party-led case studies used to evaluate the impact of ICT interventions on Indigenous wellbeing. These include considerations of accessibility of data, intervention type, proposed impact on development, as well as scale:

- Due to the high cost of traveling within Guyana and the difficulty to reach certain remote areas, accessibility of data was a key concern in the selection of case studies. In addition, it also took into account the practicalities required for “entering the field” (Bernard 2006:356), including the procedure for obtaining a research permit. These considerations restricted the research area to certain communities and excluded others.
- Choosing a specific type of ICT intervention further narrowed down the list of potential case studies. The recent multiplication of interventions involving the provision of internet access and/or use was seen as particularly interesting in an Indigenous context.

- One additional way to distinguish between ICT interventions was to separate those which saw ICT as a mere tool within a larger intervention from those promoting internet access and use as a direct contributor to development and wellbeing.
- Lastly, the selection of case studies also followed considerations of scale, and aimed to select interventions taking place both at the national and the local levels, provided they aimed at improving wellbeing in the North Rupununi. This last criterion was based on the systemic assumption that ICT interventions are interdependent and part of a large ensemble featuring infrastructure, network and end devices.

### **3.2.3 Strand 2: Researcher-Led Intervention**

The second strand of inquiry focuses on a researcher-led ICT intervention – *Pantanî Blog* - that took place from June 2014 to May 2015. This intervention was made possible thanks to the financial support from an individual benefactor, alumnus of the Open University, for implementing an intervention supporting environmental management through the use of handheld technologies. This case study differs from the third party-led case studies in that I was directly involved in the planning and implementation of the intervention, sharing in that sense common characteristics with *experiment* (Yin 2014). However, rather than resorting to behaviour manipulation, the intervention was thought of as a value-based partnership (Nelson et al. 2001), in order to facilitate mutual trust, respect, and open communication (Park 1993) between the participants and myself.

*“[P]artnerships heighten commitment of all parties, intensify collaboration, and bring more meaningful results” (White et al. 2003:5).*

The intervention was guided by participatory action research (PAR) principles in that it sought to combine the tasks of expanding scientific knowledge with that of assisting in practical problem solving (Clark 1972; Hult & Lennung 1980; Rapoport 1970), using a participatory framework. As a digital storytelling intervention, Pantanê Blog was effectively at the crossroads between participatory action research, narration and community engagement (Cunsolo Willox et al. 2012) with the aim of having a positive impact on the situation of interest.

#### **3.2.4 Fieldwork Access and Authorisations**

The main fieldwork period, during which the major part of the data was collected, took place between 27 January and 8 June 2014. Initially based in the North Rupununi, I travelled twice to the capital city Georgetown to sort out research permit issues and carry out interviews with government officials, international organisations and NGOs. This period of fieldwork was followed the year after, by a shorter stay between 20 and 30 May 2015 during which I carried out follow-up interviews and public presentations. Additional data was collected throughout the researcher-led intervention, from June 2014 to May 2015. Some additional follow-up interviews were carried out until the end of 2015 and during the first half of 2016.

As part of the preparations for fieldwork, several authorisations were sought from the Guyanese authorities as well as the North Rupununi communities in which my fieldwork was embedded. Two of the Guyanese partner organisations in Project



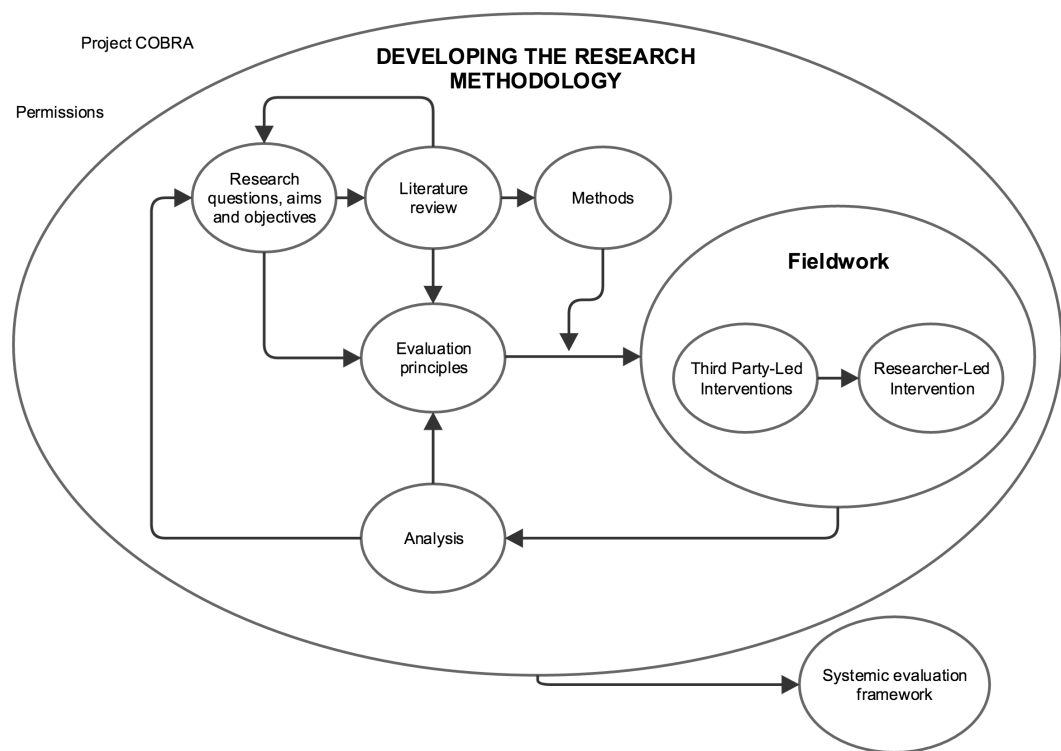
COBRA, Iwokrama and the NRDDDB, were instrumental in this process. They assisted me in gathering the necessary authorisation letters from North Rupununi communities, and effectively played the role of intermediary organisation between these communities, the Guyanese authorities, and myself.

The research application documents were submitted to the Environmental Protection Agency (EPA) at the end of October 2013. I had been informed that the permit procedure would last a maximum of three months from the date of the submission of documents to the EPA. However, the research permit was formally obtained on 18 March 2014 from the Ministry of Amerindian Affairs, and on 11 April 2014 from the Environmental Protection Agency, causing an important delay in my original plans for collecting data. Having arrived in the North Rupununi at the end of January 2014, the first seven weeks were spent settling in Bina Hill, *hanging out* (Bernard 2006), that is, gaining rapport with the people in Bina Hill, as well as piloting interview schedules with several local contacts, and assisting the Project COBRA team with their activities. The permission documents were collected from the Ministry of Amerindian Affairs in Georgetown on 18 March 2014, and signalled the beginning of my data collection in the two communities of interest of this study: Surama and Yupukari.

### **3.2.5 Research Design**

Normally, a research design might be understood as “a logical plan for getting from here to there” (Yin 2014:28), a linear process of inquiry. In this doctoral thesis, however, the research design was structured as iterative cycles of inquiry where feedback from experience and reflection on wellbeing influenced subsequent strands of research and actions. The diagram below (Figure 8) illustrates the various stages of

the research methodology, using system and subsystem representations. For the sake of simplicity, I refer to this diagram as *Research Methodology*.



**Figure 8 - Research methodology based on systemic inquiry**

Recognising that this research occurs in a specific Indigenous context, influenced by personal experiences, e.g. Project COBRA, and dependent on certain access permissions, the research methodology is initiated with a set of research questions, aims and objectives, informed by a review of current literature. A set of evaluation principles is then adopted and data collection methods are selected, and applied for the evaluation of case studies, in order to generate a first understanding on how ICT interventions are affecting the wellbeing of Indigenous communities in the North Rupununi. Although they do constitute separate strands of inquiry, the findings of the

third party-led case studies also feed into the researcher-led intervention. The analysis of the case studies then feeds back into the research aims and objectives and, importantly, into the evaluation principles, gradually informing the design of a systemic evaluation framework as the research progresses. As can be seen in Figure 8, the process does not unfold in a linear fashion, where methodology is first developed and then applied in the field. It follows instead an iterative approach, which includes multiple transfers of focus between the two strands of inquiry, the evaluation framework and the literature, in line with qualitative approach principles, and according to the needs for constructing my understanding. The thesis itself is the result of this iterative, reflective approach, through consolidation, review and write up.

### **3.3 Evaluation Principles and Methods of Analysis**

#### ***3.3.1 Mapping interrelationships***

Having engaged with systems thinking and pragmatism theories in Chapter 2, a set of principles and methods are adopted as potential components of a systemic evaluation framework for the evaluation of the impacts of ICT interventions on Indigenous wellbeing. The first principle consists in understanding the context of intervention, by exploring the situation of interest and mapping interrelationships. To do this, it draws on both Soft Systems Methodology<sup>13</sup> (SSM) and Critical Systems Heuristics<sup>14</sup>

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<sup>13</sup> Soft Systems Methodology (SSM) (Checkland & Scholes 1990) is a widely recognised application of systems thinking in the field of information systems (Bell & Wood-Harper 2007; Checkland & Holwell 1997). The aim of soft systems thinkers is to engage with the perspectives, the subjective insights of stakeholders by using interpretive and participative approaches.

<sup>14</sup> As a methodology, Critical Systems Heuristics (CSH) builds on the traditions of systems thinking developed by Churchman (1979) and of practical philosophy, the latter being at the crossroads between American philosophical pragmatism (Peirce 1878; James 1907; Dewey 1925) and

(CSH) techniques. Rich pictures are used to explore informally the problematical situation and to map its interrelationships, prior to delving into more detailed analysis of the situation. In systemic practice, particularly Soft Systems Methodology, the rich picture technique is used for gathering information about complex situations (Checkland 1981; Checkland & Scholes 1990). As Bell et al. (2016) suggest, the matter at the heart of the drawing is gaining *insight*. Using drawings, pictures, symbols, and text, a rich picture can be compared with a “map of the (perceived) ‘real world’” (Midgley 2000:318), from the viewpoint of the person or group of persons producing it. Rich pictures can show *objective* elements, such as relationships, influences or cause and effect, as well as more *subjective* ones, e.g. character, prejudice, spirit and human nature. They can therefore be regarded as visual summaries of the physical, conceptual and emotional aspects of a situation at a given time. While rich pictures are often done as a communal activity, involving various stakeholders, they can also be achieved individually, as was the case in this research. Such approach has been used in information systems and ICT4D by Andrew & Petkov (n.d.); Gunawardena & Brown (2007); Loudon & Rivett (2010); Turpin et al. (2009); Turpin et al. (2013) Walsham et al. (1988); Wicander (2011).

Simultaneously, the framework applies a simplified version of CSH (Ulrich 1983), in order to identify each intervention’s main stakeholders. A set of four questions are asked - *who gets what, who controls what, who does what, who gets affected by what some people get* - to unfold boundary judgements, as a way to elicit the main roles, or

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Habermasian critical social theory (Habermas 1972; 1984; 1987). According to Ulrich and Reynolds (2010), CSH provides a framework for disentangling complex issues and clarifying values by making sense of a situation, unfolding perspectives to promote mutual understanding, and transforming situations.

sources of influence that may apply in the intervention (cf. Reynolds 2014a).

Combined with rich pictures, this method provides a basic insight of interrelationships and a sense of orientation about the intervention: what the intervention claims to achieve, and what are its built-in limitations. This exercise also helps identify the intervention's main categories of stakeholders - the beneficiaries, owners, experts involved in the intervention, as well as those who might be affected, including its potential victims. This provides a baseline for comparing perspectives and questioning boundary assumptions.

### ***3.3.2 Engaging multiple perspectives***

A second principle consists in grasping differences in perspectives for the various stakeholders involved in the ICT intervention. It applies a PQR formula (Checkland & Poulter 2006:39) to produce simple systems, from the perspective of each stakeholder. The PQR formula is used in SSM to help produce a simple system, that is, to arrive at a descriptive statement of the activity system – or intervention - being modelled, also known as a *system of interest*. The statement unfolds in the following way: do P, by Q, in order to help achieve R, and answers the questions What? How? And Why? (Checkland & Poulter 2006:39). In this formula, Q captures the process of transformation, which characterises the purposeful activity.

An *ideal* purposeful activity model is then proposed, espousing the perspective of the intervention owner, and informed by other contrasting perspectives, and worldviews. In doing so, it is important to motivate the decision, and to reveal the thought process that helped shape this decision. This model is further enriched using the CATWOE mnemonic. Each letter of the mnemonic refers to a different facet of the system

explored: T and W refer to the *transformation process* based on a specific *worldview*. A refers to the actor(s) who do the activities involved in the transformation. C are the *customers*, i.e. those who will be affected by the transformation as beneficiaries or as victims. E refers to the *environmental constraints*, which surround the transformation process (but are located outside it). Lastly, O refers to the *owner(s)*, the person or group of persons who can stop or change the transformation process. This technique for modelling an ICT intervention has notably been used by Cordoba and Midgley (2006), for IS planning, or by Urquhart et al. (2008), in their discussion on ICT and poverty reduction.

### **3.3.3 Boundary reflection: evaluation of ICT4D intervention**

Evaluation may occur during (cf. formative evaluation) the transformation process or after it has taken place (cf. summative evaluation). It consists in evaluating the intervention's success, looking at immediate outputs, at the wider benefits and disbenefits associated with the intervention, or outcomes, and at the contribution of the intervention to Indigenous wellbeing, or the intervention's impacts. In this tentative framework, it does so by applying a two-stage process inspired by Flood and Romm's (1996) Triple Loop Learning tool (see also Reynolds 2014), which features a sequence of questions corresponding to various levels of abstraction:

- Is the intervention done right? This question focuses on the intervention's *efficacy* and *efficiency*. It explores how the intervention was implemented, and to what extent it worked. This question focuses on the outputs of the intervention. In systemic terms, such outputs are located within the

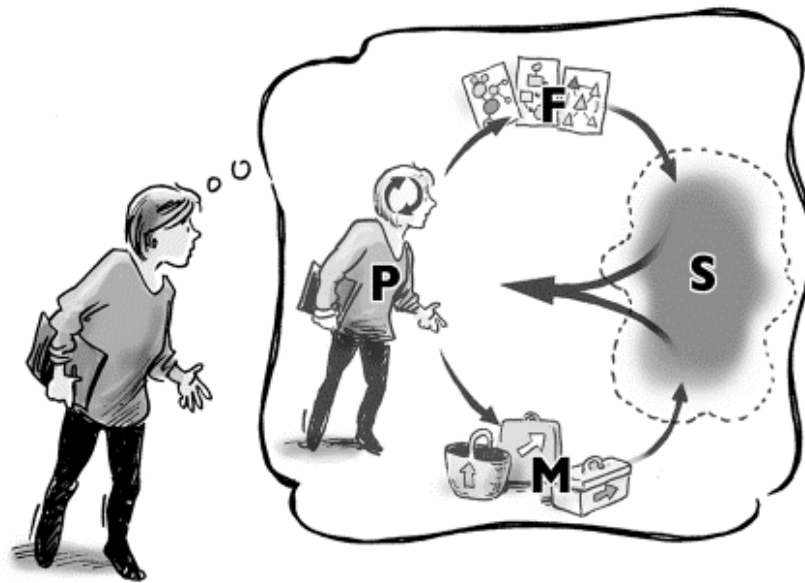
boundaries of the system of interest. It corresponds to the main, immediate goal of the intervention.

- Is the intervention doing the right thing? The second question looks at the intervention's effectiveness, its wider outcomes and impacts on Indigenous wellbeing. Both of these elements are situated beyond the boundaries, in the environment of the system of intervention. Therefore, instead of accepting the intervention's goals as a given, this stage involves questioning and possibly changing them through a process of reflecting, adapting and revising boundary judgements associated with the intervention. Such boundary reflection is associated with what Ackoff & Emery (1972) call goal-searching purposeful systems.

#### **3.3.4 Boundary reflection: reflexivity**

*"Reflexivity can be defined as thoughtful, conscious self-awareness" (Finlay 2002:532).*

Having gone through the evaluation, this principle consists in interrogating critically how power relations might have circumscribed particular purposes being valued over others. The systemic approach recognises that, as a researcher, I am personally embedded in the situation of interest. By consequence, my own research is itself a second order intervention, which frames the situation under study. It implies that my own process of inquiry is subject to reflection as well (Figure 9).



**Figure 9 - Reflective practice 2 - Source: Figure 3.5 (Ison 2010:48)**

This reflexive process seeks to answer the question: ‘How do I know what is the right thing to do?’, and involves a critique of the boundary judgements. It should be noted that while it is here presented as distinct from the evaluation of the ICT4D intervention, such boundary judgment can also be performed in conjunction with it, throughout the evaluation process.

### ***3.3.5 Take (or recommend) adaptive action***

Reflecting on boundaries opens up the way for making an informed decision on potential adaptive actions. The last principle of this evaluation framework focuses on producing recommendations for adaptive action or, if allowed, on taking action to improve the situation and adapt the intervention further to local circumstances and experiences, as informed by the findings obtained from the use of the systemic evaluation framework. This step achieves circularity by enabling an on-going implementation, evaluation and adaptation process. Practically, this means that once



the systemic impact of an intervention has been assessed, adaptive measures can be taken to correct any negative effects from the intervention. These adaptive measures are then equated with a new set of inputs. The cycle can then be repeated in an iterative “process of learning” (Checkland & Poulter 2006:61), as the action taken changes the characteristics of the situation of interest, and creates a new, hopefully better, situation, which requires its own evaluation.

## **3.4 Methods and Techniques of Data Collection**

### ***3.4.1 Open Inquiry: An Evaluative Technique***

This section outlines the methods and techniques that have been used for collecting data on the local Indigenous context and selected ICT interventions. These techniques should be seen as constitutive parts of an open inquiry, a qualitative, exploratory evaluation method, which looks at what is happening, in order to extract assumptions and intentions. Open inquiry contrasts with audit review evaluation, which systematically examines practice in light of the goals, objectives, aims, activities and targets set prior to the intervention. Given the subjective and changing nature of wellbeing, open inquiry favours a process of on-going evaluation, similar in ethos with Developmental Evaluation (Patton 2010), which looks beyond an intervention’s existing goals, objectives, aims, activities and targets, with the aim of suggesting ways to improve it. Each technique constitutes a component of the systemic, critical evaluation framework, which I have proposed in Chapter 2, and begun to unfold in this methodological chapter.

### ***3.4.2 Documentary and Digital Data Collection***

Documentary and digital data were collected throughout this research. Documentary data collection has been described as the technique used to categorise, investigate, interpret and identify the limitations of physical sources, most commonly written documents, whether in the private or public domain (Payne & Payne 2004). As part of the open inquiry approach, the data collection began as a relatively broad exploration and filing of – mostly digital – data. The scope was gradually narrowed down as I progressed through fieldwork, my interviews with stakeholders, and learnt more about the national and local Indigenous context. The documents collected include:

- Legal and policy documents
- Communications, declarations and reports from the Government
- Reports from international institutions
- Articles from all major newspapers and news agencies operating across the political spectrum
- Former published and unpublished studies. This research benefited for instance from some of the fieldwork notes of Neil Hogarth, a former OU PhD student who carried out a feasibility study on the distribution of wireless internet in the North Rupununi using radio waves.
- Regional and local documents from the NRDDB, maps, Community Development Plans
- Social media content

- Facebook and Google analytics of website frequentation

The collection of documentary and digital data was not always without challenge, and occasionally prompted me to reconsider or adapt some of my initial plans. For instance, one of the techniques I had hoped using was network analysis. I had planned to produce visual representations of local organisations' and communities' online networks. This visualisation would have provided me with quantitative data for better understanding the extent of Indigenous ICT-mediated social networks. I had already begun to learn about open source software *Gephi*, which is used to build Facebook network visualisation maps, starting from a simple file downloaded from the organisation's or community's Facebook page. Unfortunately, frequent changes in Facebook's privacy settings made the collection of such files increasingly challenging and constraining, and the software itself was often unavailable as it went through frequent updates to keep up with the evolution of Facebook's settings. Consequently, this approach was abandoned.

Another challenge was the difficulty to collect local documents, such as printed copies of community development plans. This difficulty was partly due to the lack of printing and IT equipment in Village Councils, which prevented me from collecting hard copies of these plans. Being a foreigner, I was also aware that the more I spent time in a village the easier it would be to build rapport and trust with community members (Bernard 2006). However, the delays in the procurement of my research permit, and the very short timeframe I was given to collect my data limited my ability to build this rapport.

### ***3.4.3 Interview Techniques***

Several interview techniques were used during fieldwork, although the most important were semi-structured interviews, a technique which has been applied in ICT4D research (Jagun et al. 2008; Rajalekshmi 2007), notably by Kleine (2013) and Gigler (2015). During the first few weeks, informal interviewing was used as the main method to initiate contact. Bernard (2006) suggests that informal interviews are means to build greater rapport with informants and help uncover other topics of interest. In practice, these informal discussions often happened during first encounters and preceded more formal discussions, such as structured and semi-structured interviews, which usually took place after several encounters.

Unstructured interviewing techniques were also used throughout fieldwork, in particular with local friends and contacts whom I spent time with and had the opportunity to interview on multiple occasions. In total, 43 interviews were carried out with 35 different peoples using semi-structured and unstructured interviewing techniques (Appendix 1). Some efforts were spent to ensure that diverse ages, genders and qualifications were represented. An indicative list of respondents was prepared ahead of fieldwork, however additional respondents were identified throughout fieldwork, using the snow-ball sampling method (Reed et al. 2009). Some of these interviews were set on an agreed day and time, and prepared well in advance, however others followed a more opportunistic approach (Darke et al. 1998).

In Bina Hill, nine semi-structured interviews were carried out between February and March 2014, with NRDDDB leaders, staff and employees. Seven additional interviews were done in Surama during two visits in March and May. These included interviews

with part-time and full-time employees of the ecolodge, such as managers, tour guides and technicians, as well as the village Senior Councillor. In Yupukari, eight interviews were led with a variety of people including *Caiman House* Board and Staff members<sup>15</sup>, the Vice Toshao – or Captain - of the community, two young government-financed Community Support Officers and a private business owner. Lastly, a phone interview with one of the American founders of Caiman House was also organised. The rest of the interviews took place with stakeholders, in the capital Georgetown, as part of an effort to understand the wider socio-technical aspects and the political economy of ICT interventions in Guyana. Ten interviews took place in March, April and June 2014 and involved the Special Advisor to the President of Guyana, a Member of Parliament, representatives of international institutions, civil society organisations, as well as private business owners and representatives of telecommunication companies. Additional Skype and phone conversations took place with the CEO of a national telecommunications company, and a Canada-based Guyanese scholar.

The following extract from my research journal describes the thought process I went through while in the field, and how it influenced the content of my questions as well as my interviewing techniques.

*I took the rest of the morning to work on my questionnaire, which I have now separated into three different forms, depending on the kind of person I will be interviewing. One thing that has become clear is that I will interview people with capacity/responsibilities that are very different, depending whether I talk to an individual in a small community or a representative of a large community. Not*

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<sup>15</sup> Caiman House is the name of the complex, which holds the library and guest house in the community of Yupukari. This will be explored in detail in Chapter 6.

*only are their experience with technology likely to be different but, more importantly, I expect that their level of responsibility might influence whether they are able to answer questions at the community level. There is also the question of time and flexibility. By breaking down my nearly 15 pages interview into three smaller questionnaires I have less risk losing people along the way and more opportunities to diverge or deepen the discussion on a specific topic (Extract, personal journal, 18 February 2014).*

*So in the beginning I used this structured set of questions and I even typed the answers into answer boxes directly in the file while going through the interviews. I had planned to do a lot of interviews before the beginning of March (40-50) and had imagined this method would be an efficient way of getting the job done. Of course, this proved to be a bad idea. Through an action research process I took notes of personal observations after each interview and adapted or tweaked the questions that did not work well (Extract, personal journal, 31 March 2014).*

Before each interview, the respondents were handed a consent form explaining the purpose and objectives of the research, what was expected from them in taking part in this research as well as a detailed account of their rights as respondents (Appendix 2). Specific attention was spent ensuring that the information collected through these interviews was anonymous and confidential (Bernard 2006). As explained in my notes, most interviews were recorded digitally using a smartphone equipped with an internal microphone and a pre-installed voice-recording application. Occasionally, when respondents did not feel comfortable being recorded, hand-written notes were used.

*I also decided to drop the technique of typing in the answers during the interview in favour of two other techniques. The first one, and the best technique consists in recording the whole interview using my phone voice recorder and engage in a semi-structured conversation with the respondent. I then type the interview as it happened (word-by-word) in a word file and save the audio file in a safe place. The second technique is my fall back technique when recording is inappropriate: I take hand-written notes during the interview and promptly type them after to add ideas and observations to the notes. Each time, I use a form of empathy to try to understand where the respondent comes from and where he/she can be most helpful. So apart from a fixed set of questions, my interviews partly change according to each interviewee (Extract, personal journal, 31 March 2014).*

#### **3.4.4 Participant Observation**

*“Presence builds trust. Trust lowers reactivity. Lower reactivity means higher validity of data” (Bernard 2006:354).*

Participant observation is one of several qualitative research methods that can be used to study the impact of ICT interventions. For Bernard (2006), participant observation is about “establishing rapport and learning to act so that people go about their business as usual when you show up” (Bernard 2006:344). It is achieved by explicitly recording and analysing information gathered through interactions with informants during fieldwork. This kind of participant observation is said to have been brought into the social sciences by Malinowski (1922). It has since been accepted as a research method and widely referred to, in particular in the literature on anthropology, but it is also used in ICT4D research (Turpin et al. 2013; Krauss 2012).

It presents several advantages for researchers. One of them is that it gives an intuitive understanding of what's going on in a culture (Bernard 2006). It therefore plays a role in enhancing the quality and interpretation of the data collected during fieldwork, including the interpretation of the data collected through other methods (De Walt & De Walt 2010). Participant observation also helps prevent researchers from concentrating too much on single issues. In other words, it disallows selective learning (Picchi 1992). The confrontation of a researcher's initial questions with the local Indigenous context may therefore encourage the formulation of "new research questions and hypotheses grounded in on-the-scene observation" (De Walt & De Walt 2010:8).

Participant observation was essentially used to facilitate other data-gathering methods and, more generally, to inform data interpretation. For instance, a few weeks after having arrived in the North Rupununi, in January 2014, it was decided, in collaboration with NRDDDB representatives and teachers of the Bina Hill Technical Institute, that it would be useful for me to develop information material about ICT and to provide ICT training to the NRDDDB staff and the students in Bina Hill. To ensure that the topic chosen had local resonance, I ran an informal survey with a small sample of people, containing a few ideas of topics (Table 5).

**Table 5 - Survey: Proposed topics of ICT training**

If you had the possibility to attend a course on ICT, what would be your preferred topics? Rate from 1 (important); 2 (useful); and 3 (not urgent)	
Handling the equipment (computer, smartphone, tablet)	
Storytelling using ICT (telling stories using online tools)	
Basic social media use (creating an account, interacting)	



Advanced social media use (curating a group/page, posting)	
Basic internet use (Surfing, doing a basic web research,...)	
Advanced internet use (Advanced web research,...)	
Privacy and security on the internet	
Other	

The answers suggested that issues of privacy and security related to internet use were a real concern. Most internet users had been personally affected by viruses or seen their passwords hacked. In addition, social media use had brought new privacy-related issues. Following the systemic action research approach that underpinned this research, I switched to action mode and decided to develop a short training course on the opportunities and threats of internet use.

The idea of sharing knowledge with local communities also corresponded to an attempt at 'decolonising' research (Smith 1999). It aimed to upset the model by which foreign researchers collect data in Indigenous communities and leave without sharing their findings, or sometimes share findings, which are of little practical interest for the local communities. In my relationship with the communities, the accent was put on the mutual exchange of knowledge, building on the insights I was gaining on the current impacts of ICT, sharing it locally, and getting feedback on my emerging understanding.

The first workshop was piloted on 10 April 2014, with a class of 35 teenage students and teachers of the Bina Hill Technical Institute. It consisted in a presentation with group exercises, followed by a discussion on the opportunities and challenges of internet use. The participants found the workshop useful and I was invited to

organise it in the offices of the NRDDDB a few weeks later. It was subsequently organised in Yupukari and Surama. Each iteration of the workshop was used to improve the content of the training, using feedback from participants to further anchor the discussion locally and focus on people's "own preoccupations, doubts, hopes and fears" (Freire 1970a:77). In total, this workshop was given to approximately 120 people between April and May 2014, in groups ranging from 4 to 50 people. In addition, it had several beneficial consequences for my relationship with the communities. It notably proved convenient for networking and publicising my research locally. It also allowed me to collect additional data in the form of surveys. Although these advantages were secondary only to my commitment of knowledge sharing to the communities I was visiting, this approach proved to be a good practice for "entering the field" (Bernard 2006:356) and gaining the trust of my hosts.

### **3.4.5 Survey**

Survey instruments are among the most commonly used methods in ICT4D research (Abraham 2007; Adeoti & Adeoti 2008; Aral et al. 2001; Best & Kumar 2008; Bhagat 2008; Jafri et al. 2002; Kumar 2004; Lobo & Balakrishnan 2002; McKemey et al. 2003; Moyi 2003; Narayana 2009; Parkinson & Lauzon 2008; Parkinson & Ramirez 2006; Souter et al. 2005; Tiwari 2008). The use of survey is also central to Gigler's (2015) research on the impact of ICT on wellbeing in Bolivia's Indigenous areas. A two-page survey was developed to gain a better idea of the type of ICT equipment owned by informants, the frequency of use, the financial aspect as well as the type of usage, e.g. leisure, work. Importantly, a large part of the questionnaire was dedicated to the

challenges associated with ICT, e.g. cost, harassment, or impacts on culture, using a rating system. The questions for this survey were developed over the first two months of fieldwork, while piloting the interview schedules and during the initial interviews, taking into account some of the responses received as well as personal observations. The survey was submitted during the ICT training (see Appendix 3). 56 participants aged from 15 to 65 years old completed this survey. While this sample is not necessarily representative of a community or village, it confirmed anecdotal evidence regarding some of the issues faced by local communities when dealing with new ICT, and highlighted disparities between male and female, as well as young and older respondents.

#### ***3.4.6 Focus Groups***

Focus groups were used in the second strand of research as a means to involve the participants in the researcher-led intervention in a general reflection about the role of ICT and the particular impacts of this intervention. Focus groups are sometimes referred to as a form of group in-depth interviewing technique (Yates 2004). They present the advantage of making possible the interview of several people at the same time, and can help identify issues that did not come up during individual in-depth interviews. They require special care from the moderator to ensure that the discussions are not dominated by one participant or a group of participants to the detriment of others (Yates 2004).

**Table 6 – Focus Groups**

Date	Type	Participants
8 November 2014	Skype discussion with the participants (bloggers)	5
25 May 2015	Group discussion with the participants (bloggers)	5
26 May 2015	Final evaluation in the community or Surama	20+

Having returned to the UK after the launch of the researcher-led intervention, the focus group of 8 November 2014 was held over Skype (Table 6). It was the first meeting involving the four Indigenous participants and myself after the launch of the intervention, in June 2014. The discussions focused notably on issues encountered by the participants, and on how to adjust the intervention's objectives accordingly. Crucially, it also led to the decision to extend the intervention for another six months. At the end of May 2015, having travelled back to the North Rupununi, a final evaluation took place, which featured a one-day team meeting, on 25 May, followed by public presentations in one community and in the local high school, on 26 May 2015.

### ***3.4.7 Stakeholder Analysis***

In their typology of stakeholder analysis methods for natural resource management, Reed et al. (2009) suggest that there are many definitions of stakeholders, most of which derive from Freeman's (1984) work on stakeholder theory and according to which stakeholders are those who affect or are affected by a decision or action. On a practical level, stakeholder analysis regroups a series of methods, which can be used for identifying stakeholders; differentiating between and categorising stakeholders;

as well as investigating relationships between stakeholders. This method was used in ICT4D research, notably by Bailur (2007b) for analysing telecentre interventions.

Although much of the literature tends to presume that stakeholders are self-evident and self-construed, Reed et al. (2009) suggest that identifying stakeholders should be part of an iterative process, taking place throughout the inquiry. In this study, stakeholder analysis was used during the data collection phase as well as as data analysis method. The first attempt at identifying stakeholders took place prior to the beginning of fieldwork, during the documentary and data collection phase. It used remote, desk-based research to roughly paint the social roles in the Guyanese ICT landscape and contributed to shaping the first list of potential informants. This initial assessment was then complemented by a snow-ball sampling method, according to which “Individuals from initial stakeholder categories are interviewed, identifying new stakeholder categories and contacts” (Reed et al. 2009:1937). Stakeholder analysis also took place during the data analysis phase, through the application of a method derived from Critical Systems Heuristics (CSH), to identify the various sources of influence in each ICT intervention.

## **3.5 Reflective Component**

### ***3.5.1 Self-positioning in the research process***

One of the important elements of qualitative research required providing clarity and transparency with regard to the positioning of the main researcher in the research process (Creswell 1998). The following actions were undertaken in my relationship with respondents:

- Attempting to understand the situation from the perspective of the respondents, in particular local Indigenous communities
- Transparency with regards to research aims and purpose of interviews with the people approached, from the beginning of and throughout the research process
- Distribution of and signature by participants in the inquiry of informed consent forms featuring information on the main researcher, the purpose of the research and its objectives, proposed contribution, potential risks and discomforts, confidentiality etc.
- Adoption of an active listener role, i.e. avoiding asking leading questions and adopting judgmental language
- Fact checking with respondents after the interview took place, when needed to clarify a hesitation
- Note taking and transcription of the audio recordings of the interviews as literally as possible, including hesitations and silences
- Leaving room for capturing emerging thoughts and adjusting approach and interviewing procedure after each interview and throughout the inquiry process
- Following the leads of respondents, when relevant, to other people and/or material that sounded relevant to the inquiry

- Accessibility of main researcher throughout the inquiry, notably via email, phone, and social media

### ***3.5.2 Diary-keeping, iterating and adapting***

The process of reflectivity may involve the use of various techniques. One of these techniques implies keeping a research journal of how the research unfolded, taking notes on observations and making suggestions to oneself. Field notes are an important way to document and safeguard observations during fieldwork. Bernard (2006:389) identifies different types of notes, such as simple jottings, or quick notes; a diary; a log; and *proper* field notes (his emphasis), which he differentiates between methodological, descriptive and analytical notes. He suggests recording them systematically and into separate files as each type of note fulfils a different objective. Each of these types of notes was gathered during fieldwork, although it followed a more personal organisation involving two main documents. The first document was a personal research journal consisting of a MS Word file kept on a laptop, and containing jottings, diary-like reporting as well as regular field notes and photographs. The journal followed a simple chronological structure, where observations and ideas about specific experiences were regularly written down during fieldwork. In total, about 20.000 words of observations were collected this way, between the beginning and the end of the first phase of fieldwork, between January and June 2014. Another file was used as a sort of *log* containing entries with all the informants met during fieldwork. Each entry featured information about the informant, including interview code, name, profile, address and contact details, date(s) met and comments about the meeting(s). It also contained the names of

potential informants and kept track of the attempts made at contacting them. Lastly, this file served as a place for writing down memos and ideas.

### **3.6 Conclusion**

Following the general introduction and an exploration of the predominant relevant discourses informing ICT interventions for Indigenous wellbeing, this chapter has presented the methodological framework underpinning this research. It has introduced the criteria for the selection of the four case studies and the methods and techniques that I have used to collect and analyse the data. Importantly, it has also outlined and elaborated on the key principles that should be components of a systemic evaluation framework. The following chapters (4-7) look at each of the four ICT interventions and analyse their impact on Indigenous wellbeing through the systematic application of the evaluation principles to the situations of interest.



## Chapter 4. One Laptop Per Family Intervention

### 4.1 Sources of data for the OLPF Intervention

Most of the data I gathered on the One Laptop Per Family (OLPF) intervention were collected through documentary and digital data collection, as well as through informal and semi-structured interviews. The main documents used to engage with the perspective of the Indo-Guyanese dominated People's Progressive Party and Civic (PPP/C) in power, and evaluate the impact of the OLPF included official documents, such as the Low Carbon Development Strategy (LCDS) (Office of the President 2013) and the conceptual framework on the process for the Multi-Stakeholder Steering Committee (Government of Guyana n.d.), and the OLPF Project Plan (Project Management Office 2010). The communication of the Government on the OLPF intervention was however limited, so in addition to these documents, I also collected newspaper articles on a regular basis. The table below lists the quantity of articles collected per major newspaper (Table 7).

**Table 7 - Newspaper articles and blog posts on LCDS, OLPF and E-Governance initiative**

Type	Name	Political affinity	Quantity
Newspaper	Stabroek News	Opposition	22
	Guyana Times	Pro-PPP/C	6
	Kaieteur News	Opposition	16
	Guyana Chronicle	Pro-PPP/C	5
	Other	Unknown	4
Blog	Propaganda Press, Guyanese Online	Opposition	3

The topic of the OLPF intervention was discussed in 16 semi-structured interviews with various stakeholders. These interviews ranged from simple, factual comments to extensive discussions about government policy. Table 8 below provides some indication about the interviews and role of the respondents with whom I had formal conversations about the OLPF intervention. Lastly, observations, thoughts and reflections were also recorded in my personal journal.

**Table 8 - Focus on OLPF intervention in semi-structured interviews**

<b>Code</b>	<b>Date</b>	<b>Place</b>	<b>Means</b>	<b>Roles and/or Sector</b>	<b>Level of most activities</b>
I5	19/02/14	Bina Hill	Face-to-face	Teacher/Principal	Local
I6	19/02/14	Bina Hill	Face-to-face	Chief Executive Officer, non-governmental organisation	Regional
I9	05/03/14	Bina Hill	Face-to-face	Programme Director and Secretary, non-governmental organisation	Regional
I11	11/03/14	Georgetown	Face-to-face	Special Advisor, Office of the President	National
I13	12/03/14	Georgetown	Face-to-face	Various interviews, Telecommunications Companies	National
I16	13/03/14	Georgetown	Face-to-face	Retired UNESCO employee	International, national
I17	25/03/14	Surama	Face-to-face	Finance Manager/Housewife, Local tourism company	Local
I18	26/03/14	Surama	Face-to-face	Tour Guide, Local tourism company	Local
I21	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I23	15/04/14	Yupukari	Face-to-face	Vice-Toshao	Local
I24	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I25	16/04/14	Yupukari	Face-to-face	Tourism professional / Board Member, Caiman House	Local
I28	18/04/14	Yupukari	Face-to-face	Village Councillor / Board	Local

				Member, Caiman House	
I31	23/05/14	Surama	Face-to-face	Manager, Local tourism company	Local
I33	03/06/14	Georgetown	Face-to-face	Project Officer, non-governmental organisation	National
I34	04/05/14	Georgetown	Face-to-face	Member of Parliament (opposition)	National

## 4.2 Context of OLPF Intervention

10 years after information technologies were first mentioned by the National Development Strategy (1999), the implementation of ICT infrastructure and programmes had become a central development policy of the Government of Guyana. The Government had set the objective of having “one of the most inclusive digital societies in the world by 2015” (Office of the President 2013:25). The vision proposed to set up digital government services, enhance connectivity and training for individuals and communities, and the intervention of the private sector. Three ‘mutually supportive’ policy objectives were pursued to this end: (i) the fibre optic cable initiative; (ii) the One Laptop Per Family programme and; (iii) the liberalisation of telecommunications (Table 9).

**Table 9 - ICT policy objectives of the LCDS (Office of the President 2010).**

Project	Component	Estimated costs
E-Governance Initiative	Transport infrastructure: fibre optic cable	US\$32-35M
	Data centre	
	Access network: 54 LTE advanced cellular sites	
One Laptop Per Family (OLPF) programme		US\$27M

The *fibre optic cable* intervention featured three main inputs: a data centre, an access network consisting of 54 Long Term Evolution (LTE) advanced cellular towers, and the installation of 560 km of fibre optic cable linking Brazil and the capital city of Guyana, Georgetown, through the North Rupununi (Office of the President 2014). A flagship of the government's LCDS, the fibre optic cable aimed to enhance broadband connectivity between the coast and the hinterland, where most Amerindian communities live, as well as to connect Guyana to Brazil's telecommunications network.

*"[It] will see expansion of telecoms services and the wireless broadband infrastructure network along the coast and into hinterland (including forest) villages and communities" (Office of the President 2013:25).*

The Government presented the installation of the fibre optic cable as the initial phase of a hinterland access project which would directly benefit the communities of the North Rupununi as well as other Guyanese and future generations (Roopnarine 2015), and support Amerindian wellbeing. The installation of ICT infrastructure was to be followed by the connection of public facilities to the network and the provision of e-government services to the North Rupununi (Kaieteur News Online 2014a), thereby transforming ICT access in a region where the use of radio was still dominant (Box 4).

#### **Box 4 - A short history of ICT diffusion in the North Rupununi**

Many ICT interventions have taken place in the North Rupununi over the past 20 years. Some local communities have been using high frequency (HF) radios since the 1980s, and communication between communities has significantly improved since the adoption of this

technology. The use of HF radio has since become a central practice in health centres as it notably helps organise faster response in case of medical emergencies. In addition, people use them to pass on personal messages, or to maintain distance relationships.

Until the end of the 1990s, HF radios constituted the only alternative to hand delivered letters and verbal communication. Although usage is free, the technology presents several limitations, including poor sound quality and the necessity to use code, which make grasping the subtleties of language in radio communication challenging. Other limitations include the absence of recorder and the lack of privacy, with conversations being available for anyone with a radio set to hear.

In 2000, the UNESCO and a number of NGOs, including Iwokrama and the NRDDDB, set up Radio Paiwomak, a subsidiary of the National Communications Network (NCN) in Bina Hill. According to the Programme Director, interviewed in March 2014, the decision to set up a community radio was supported by the NRDDDB as it provided “a way for communities to communicate faster” (19). Incidentally, it also constituted an amplifier for the NRDDDB’s work and a key source of information and leisure for many families. Broadcasting in all 16 principal North Rupununi communities - albeit not in every household - Radio Paiwomak proposed a variety of programmes to its audience, which included news flash, cultural and educational programmes, as well as musical programmes. However, the media lacked independence. The political control exerted by the Government on Radio Paiwomak, through the National Communications Network translated in a form of censorship, which was partly self-inflicted. In 2002, the Government threatened to close down Radio Paiwomak after a programme had mentioned the holding of a political rally in favour of a member of the opposition. Since then, politically sensitive topics appear to have been removed from the radio programmes altogether.

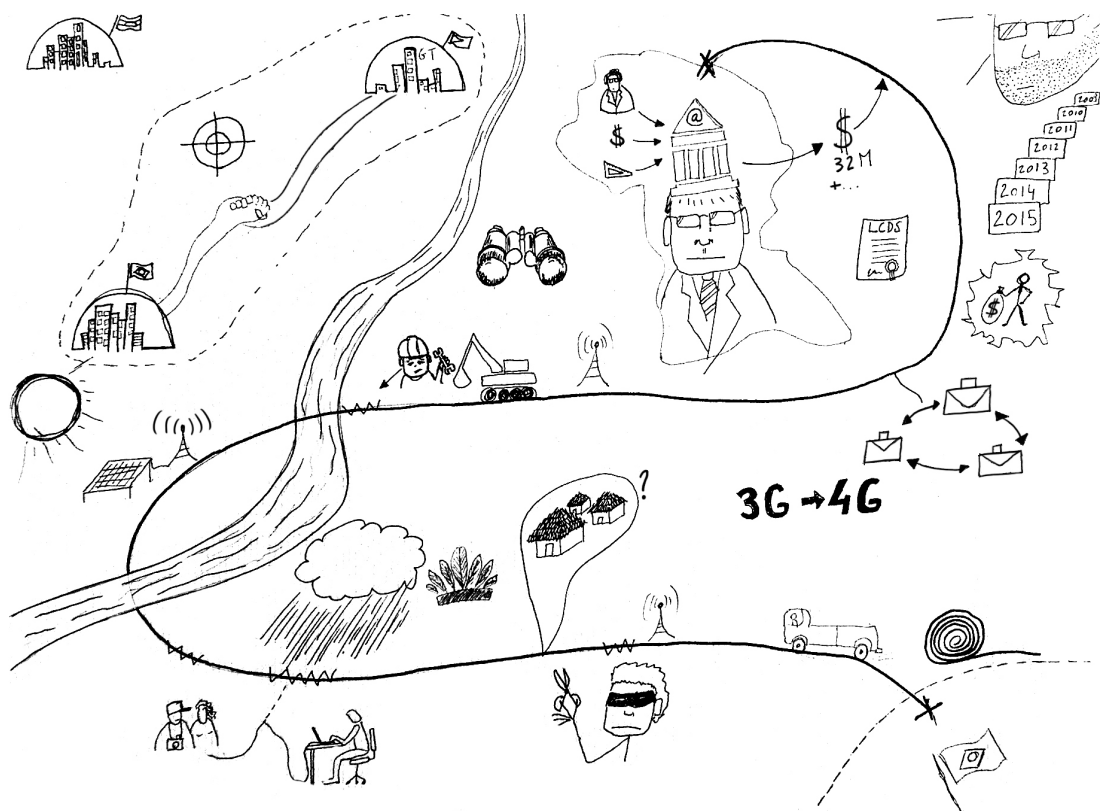
Recent years have seen the mainstreaming of ICT interventions in development plans, with ICT4D projects being launched at the national, regional and local levels. Regional projects such as the Community Monitoring, Reporting and Verification (CMRV) project and Project COBRA are two examples of such interventions. Established in 2010, the CMRV project was funded by the Norwegian Agency for Development Cooperation (NORAD) to test an approach for monitoring natural resources and collecting socio-economic indicators in the North Rupununi, using handheld devices and internet cloud services (Global Canopy Programme 2014:4). At the local level, some communities and tourism operators have been accessing

satellite-based internet since the early 2000s, but it remains a rarity.

Figure 10 captures my understanding, as of April 2015, of the wider situation of interest. Brainchild of former President Bharrat Jagdeo, the fibre optic cable, represented by the long curved stroke in the picture, was a central component in the government's ICT policy. It is shown linking the capital Georgetown to the border of Brazil, amid looming geopolitical tensions with Venezuela<sup>16</sup>. The image also illustrates some of the issues faced in the implementation of the intervention. These include challenging environmental conditions, sabotage, theft, but also suspected mismanagement and corruption. Both fibre optic cable and OLPF interventions were closely related, as the success of the OLPF appeared to be largely dependent on the ability of the Government to achieve the provision of internet access in the North Rupununi. The fact that OLPF laptops are not explicitly represented on this picture suggests that, when I began this evaluation, I personally had an information centric understanding of the intervention. In other words, internet access and e-government services were presented as being the main strength and added value of the OLPF intervention.

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<sup>16</sup> Guyana and Venezuela have an ancient unresolved border dispute according to which Venezuela claims that the land west of the Essequibo river belongs to its territory (Fernandez Y Gomez 1992). In this context, Guyana had an interest in reinforcing its economic and political ties with Brazil.



**Figure 10 - Rich picture of national ICT project (April 2015)**

The OLPF intervention largely drew on the One Laptop per Child (OLPC) project developed in the premises of the Massachusetts Institute of Technology (MIT), and which had seen MIT professor Nicholas Negroponte and UN Secretary-General Kofi Annan introduce a prototype children's laptop at the 2005 World Summit on the Information Society (WSIS) in Tunis. In planning the OLPF intervention, the Government of Guyana had hired the services of foreign experts. Their role was to organise consultations with stakeholders, including local civil society organisations, and help detail the objectives of the intervention. The resulting plan appeared to ensure a wide support for the intervention, firstly by focusing on the needs of beneficiary communities, but also by ensuring that they had a central role in the implementation of the intervention.

### 4.3 OLPF Intervention: A System of Laptops for Community and Economic Development

The results of the consultations with civil society organisations were integrated in a project plan published, in April 2010, by the OLPF Project Management Office (PMO), which operated under the authority of the President of Guyana. The reading of this document, which outlines the rationale and details of the intervention, comes across as aggregating different perspectives. One stakeholder interviewed in Georgetown confirmed this:

*“When the OLPF was being designed, I was pretty much involved. I worked with New Challenge Guyana on rural and community development and we thought that ICT becoming more streamlined in Guyana and coming to the fore, it would be a good idea to involve families in learning to use a computer, learning the benefits of having a computer with internet access. What you can do is even stay at home and work from home. You know, many companies do outsourcing and that kind of things so you don’t necessarily have to leave your house to go to work. But the way we had thought about it, and we had started to put up a proposal, a concept note in terms of how it should be done. Eventually, the Government decided that they were going to start something similar so we were partners” (I33).*

The document begins by recalling the national development aim underpinning the OLPF intervention, which was to use ICT to support and foster Guyana’s community and economic development within the Low Carbon Development Strategy (Project Management Office 2010). In this framework, the objective of the intervention was to

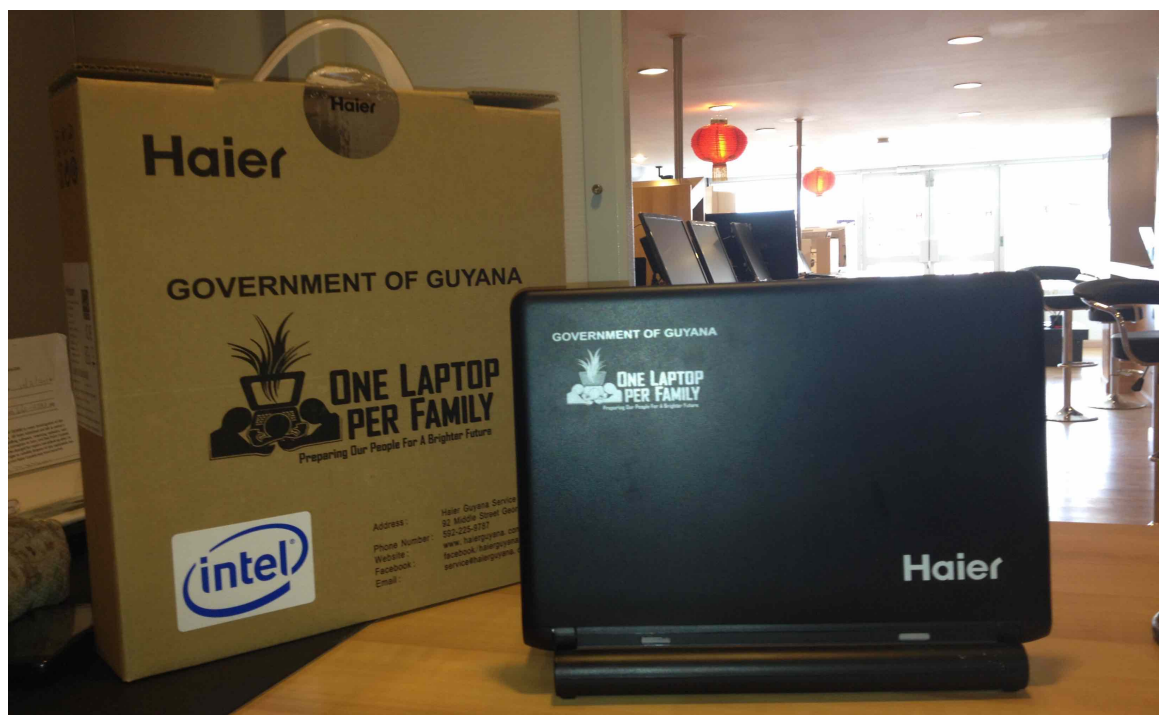


increase the technology awareness, knowledge and skills of Guyanese people in order to prepare Guyana's workforce for ICT-related work. Its mission stated in substance:

*"It is the mission of the One Laptop Per Family Guyana to provide Internet connected mobile computers to families throughout Guyana to foster community and economic development, support computer education in primary and secondary schools and increase Guyanese technology awareness, knowledge and skills through a family focused community based project model to prepare individuals for ICT related work" (Project Management Office 2010:5).*

To achieve this objective, the Government announced it would unroll a plan for the financing, tendering and distribution of 90,000 internet-connected laptops to 50% of Guyana's (poorest) households (Figure 11), an operation expected to cost US\$30 million over three years (Gilardie 2010a; Isles 2010; Lowe 2011), excluding the costs of the installation of the fibre optic cable. According to the Head of the Presidential Secretariat Roger Luncheon, interviewed in 2011 by the Guyana Times newspaper, the provision of internet-connected computers to families and local communities would be the most transformational, social and economic development programme undertaken by the country:

*"[It will be] a critical component of the new frontier developmental paths that will drive the new and more prosperous Guyana. Since the launch of OLPF in January 2011, the wheels of innovation and national fervour that will eventually place modern, mobile computers into the hands of some ninety thousand families have been turning incessantly." Quote from Dr Roger Luncheon in Guyana Times International (2011).*



**Figure 11 – Display of a laptop of the OLPF programme at an Haier shop in Georgetown in 2014**

A key characteristic of the OLPF was the recognition that, to be successful and positively impact wellbeing, the project ought to work closely with partner organisations and local communities. It rejected the idea of a centralised top-down planning and implementation system to unroll the OLPF. To this end, the Project Plan envisioned a simple OLPF organisation consisting in four staff positions. The staff would act as a central point to which applications for projects would be submitted and evaluated, leaving the actual distribution of computers to partner and community organisations:

*“Communities working with Project Partners will develop, manage and execute their own OLPF project” (Project Management Office 2010:5).*

*“A centralised top down planning and implementation of OLPF will never be able to know, address and implement programs in each community in Guyana that will most effectively address the specific development issues of each community” (Project Management Office 2010:31).*

One of the first steps of the OLPF intervention was therefore to engage with Guyanese organisations working on development, social and educational projects, and select a few communities across Guyana to run a pilot project development phase:

*“[U]sing several geographically, socially, culturally and economically diverse pilots provides a means to learn and understand the unique issues that communities will face during a OLPF project [and] to help the OLPF create a best practices profile to provide communities and Project Partners for planning [other OLPF projects]” (Project Management Office 2010:19).*

As a national-scale intervention, the OLPF applied to very different local contexts, depending on whether it took place in coastal areas or in the interior areas. It therefore required context-specific adaptations. In the North Rupununi and other non-electrified regions, the Project Plan suggested that ICT hubs could be created, that communities could use as collaborative sharing environments to increase social cohesion. The Bina Hill Institute, the Women’s Group and the Annai Secondary School were identified as potential partners for the implementation of pilot OLPF projects, involving the NRDDDB, Iwokrama, teachers as well as students.

*“A tech park under a solar array could be a community centre to facilitate the young and old talking and learning together about how the computer can be*

*used by the entire community constructively to improve conditions and create greater economic health and education opportunities” (Project Management Office 2010:18).*

To ensure that these projects also benefitted the wider community, the plan added that one of the criteria for the selection of eligible projects would be to include a contribution to the community, e.g. in the form of a community service. In Amerindian communities of the hinterland, the Plan suggested for instance using the intervention to help capture and share their cultural heritage:

*“There is one national project that we might enlist Amerindian children to work on leveraging and fostering their computers skills in the process. Much of Amerindian heritage and culture is being lost as the memories of older members of the communities fade. As new technology is introduced the young will become less interested in learning and sharing their ancestor's oral history. This is not only a tragedy for each family, community and tribe but a huge loss for Guyana. The computer could be a tool to help capture this heritage in words, pictures, videos, audio and art. The work to earn a computer for many Amerindian children could be to capture their family and community traditions on their computers. These stories and visuals could then be gathered on a web site so everyone could have access and interaction with a living history of South American Amerindians. Older members of the community may become interested in using computers to add their own ideas and memories directly to [an] Amerindian Heritage on-line Library” (Project Management Office 2010:24).*

The recognition in the Project Plan of the importance of involving local development organisations in the design of their own OLPF interventions constituted an opportunity for these organisations to mobilise OLPF resources according to their own wellbeing priorities.

### ***Engaging with Perspectives***

Having explored the context of intervention and exposed some of its interrelationships, it becomes possible to produce a series of potential simple systems as defined by PQR (what/how/why) for the intervention situation:

*A system to prepare individuals for ICT related work, by way of the distribution of 90.000 internet-connected mobile computers and the provision of ICT training, in order to support Guyana's economic development.*

*A system to increase technology awareness, knowledge and skills, by way of supporting computer education in primary and secondary school, in order to foster community and economic development.*

*A system to engage local and community organisations in the diffusion of ICT, by way of supporting community development initiatives, in order to reduce the resistance of remote and isolated communities to the adoption of technology.*

*A system to support community-driven development projects by way of providing these communities with ICT solutions, in order to enhance their wellbeing.*

*A system to engage young and old Amerindians with technology, by way of using computers to capture this heritage in words, pictures, videos, audio and art, in*

*order to safeguard Amerindian heritage and culture, and increase their computer skills in the process.*

*A system to facilitate the young and old talking and learning together about computers, by way of setting up ICT parks under a solar array, in order to improve conditions and create greater economic health and education opportunities.*

*A system to obtain the political support of poor Guyanese families, by way of distributing free technological items, in order to win the upcoming general election.*

...

This non-exhaustive list of simple systems exemplifies the multitude of potentially competing – and occasionally contradictory - perspectives that characterised the OLPF intervention. In producing a definition that might be used to describe an ideal purposeful activity system, I was faced with several contradictions. For instance, the intervention plan insisted on the importance for communities and local partner organisations to develop, manage and execute their own OLPF projects. Contact had been established with the NRDDDB to run a pilot project in the North Rupununi. However, the same document suggests that, given the limited infrastructure in the region it might be more appropriate to adopt the model of telecentres as a general rule. The definition in Box 5 takes these constraints into account to present what I consider to be the perspective of the owner of the system of interest, i.e. the Government of Guyana, at the launch of the intervention.

#### Box 5 - OLPF intervention simple system (ideal)

A system to...	Increase technology awareness, knowledge and skills
By way of...	The setting up of solar-powered, internet-connected ICT parks
In order to...	Support economic and community development

Using the CATWOE mnemonic can then further expand the model:

- Customers: Amerindian communities of the North Rupununi
- Actors: Project Management Office, with the participation of the intended beneficiary communities
- Transformation process: the setting up of solar-powered, internet-connected ICT parks and the provision of training for increasing ICT/technical skills
- Worldview: development as economic growth, with some reference to human and social wellbeing
- Owners: Office of Climate Change, under the authority of the Office of the President of Guyana
- Environment: constraints related to the lack of infrastructure in beneficiary communities and the delays in the installation of the fibre optic cable

## 4.4 Efficacy and Efficiency of OLPF Intervention

### 4.4.1 Technology Awareness, Knowledge and Skills

As an intervention aimed at increasing technology awareness, knowledge and skills, the training component was expected to constitute a central feature of the project. In effect, the communities of the North Rupununi were invited to send two individuals for training in Georgetown. These participants were then expected to transmit their knowledge to other villagers:

*“All the communities had to send two CSO [Community Support Officer] representatives to the training, these were the CSOs involved in IT. Apparently it was two training, one for ICT and the other one for the maintenance of the solar panel system, which would be the power supply for the computers” (I18).*

*“Well now that they have the CSOs the Government is giving courses but just for them. [Hidden name] went to get a course but now he has to do the training with the villagers, mostly the school children” (I17).*

By early 2014, only one training had been organised by the Ministry of Amerindian Affairs, for a duration of five days. Having attended this training in Georgetown, respondents from Surama and Yupukari were discontent with the organisation and contents of the training, arguing that they had only been given a very basic introduction to computers rather than what they considered a proper ICT training:

*“When we got to town, there was some miscommunication between these two training and the training was primarily for the solar voltaic system and not really for the ICT people. And when they actually introduced the ICT part it was*



*for people who never used computer before. So it was an introduction to computers instead of an ICT training. So for a lot of us who already had knowledge of the computers it was basically – and sorry to say it out loud – useless to us” (I18).*

*“I did not learn anything. But I was helping out teaching the others because there were other persons that had never touched a computer so it was like inserting a battery, plugging it, learning about the keyboard. It was just ten laptops for 100 participants.” (I21).*

These respondents were from communities that had already had a long access to ICT. Unlike other communities, youngsters from Surama and Yupukari had experience in using laptops, as will be discussed in chapters 5 and 6, and were therefore more advanced than many other participants. However, the fact that there was only one laptop per 10 participants suggests that even for those who were discovering ICT, the chances to have a significant hands-on experience were very low. In that sense, it can be argued that the intervention largely failed to achieve its objective of increasing technology awareness, knowledge and skills.

*“The question is what really is the intent of these things? They have what they call the CSO program where they have these young peoples and they are sort of gonna be using those CSOs to be the ones that train etc. However, what has been happening is, from my community, two persons came to Georgetown to train in solar installation etc. That’s what they were supposed to come for. But they have come and they have gone and nothing was done. You see, I don’t see how they are going do it...” (I33).*

#### **4.4.2 ICT Parks**

In early 2014, the North Rupununi communities were in the process of setting up ICT parks. I was able to witness the improvement of buildings in Surama and Yupukari, as well as in Katoonarib, a community of the south Rupununi that I visited with Project COBRA. These improvements were financed by the Government and aimed at getting the community centres ready, ahead of the delivery of OLPF laptops and associated infrastructure (solar panels, batteries, inverters, etc.). One of the members of the Village Council of Yupukari confirmed that the laptops would be delivered shortly (although he did not know exactly when):

*“[T]here will soon be internet here in the Village Office. These computers will be installed by the Government and then it will be handed over to the communities [...] that is what they told us. They promised us computers/laptops to every household. But it is too expensive to install everything house to house so they put it in one place instead. Approximately 26 laptops are coming in so everybody that is interested to learn or contact/email someone they come here” (I23).*

However, about a year later, in May 2015, interviews and observations made in the North Rupununi revealed that none of the local communities had received the laptops they expected. In Yupukari, the Village Office that was undergoing upgrades the year before had been completed for months, and featured freshly painted walls and brand new wooden cubicle desks. But the villagers were still awaiting the laptops. The Councillor was not sure why the computers had not arrived. He said that the electric wiring had yet to be done too, but they had been told that the funds were missing. Instead of containing laptops, some of the empty cubicle desks of the learning centre

were used to store various items (Figure 12). The room itself had been transformed into an informal shop with a sign outside the door of the building indicating that gas could be purchased by the litre. The Councillor said he had been trying to contact people in Georgetown but that he had not received any explanation as to why the computers were not delivered. At some point, he just stopped trying and gave up. The situation was similar in Surama and other communities. When asked about the amount of laptops distributed in the region, the Administrator of the North Rupununi District Development Board (NRDDB) confirmed:

*I do know that [hidden name] was the recipient of one through [the National Communications Network]. I do not think that anyone else in the North Rupununi has ever gotten a computer from the OLPF project” (16, email follow up interview, October 2015).*



**Figure 12 - Empty cubicle desks in the Yupukari learning centre (May 2015)**

#### ***4.4.3 Community and Economic Development***

At the end of 2014, almost one year after the original deadline of the OLPF intervention, the Government Information Agency (GINA) declared that 50% of the OLPF laptops had been distributed in Guyana (GINA 2014). The implementation of the OLPF had encountered a number of challenges that had significantly slowed down the completion of the project, including failures in the installation of the fibre optic cable<sup>17</sup>. Issues ranged from the difficulty to identify eligible recipients to logistical problems and faulty batteries (Ramotar & Layne 2014). Rumours over laptops going missing were also reported, prompting an investigation on the head of a local security firm and some OLPF staff members who were under suspicion. The investigation uncovered that several laptops had been stolen or sold to poor families, leading to the termination of contract of seven OLPF employees. The 2016 audit of the OLPF revealed the extent of the issue, with over 5000 laptops unaccounted for or defective (Singh 2016).

The composition of the PMO had grown to count 70 employees instead of the team of 4 staff, as initially indicated in the Project Plan (Kaieteur News Online 2015), costing the intervention more than US 3.5\$ Million. A forensic audit report of the financial operations and functioning of the OLPF done after the May 2015 elections revealed that the laptop distribution costs and training had amounted to US\$ 511,000, the rest being dedicated to employment costs and administrative expenses (see Figure 13):

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<sup>17</sup> After the completion of some elements of the fibre optic infrastructure project, such as the solar power installations and the laying of 560 km of fibre optic cable between 2010 and 2012, the project was allegedly suspended in November 2013, due to errors in the way the cable had been installed. Evidence circulated, e.g. on social media, including footage filmed along the Georgetown-Lethem road, showing visible parts of the cable and suggesting that it had not been buried deep enough into the ground (Real Guyana 2015).

*“It is clear from the summary analysis above that [a large share of] the total cost was incurred due to indirect expenses” (Singh 2016).*



**Figure 13 - Office of the OLPF Programme in Georgetown**

Furthermore, the process behind the financing of the intervention raised questions, as well as the method used to source the best equipment in terms of value for money. The audit report showed for instance that the intervention had not maintained a proper system of accounting and that the financial systems and internal controls governing the project were weak, and enmeshed with political considerations:

*“While the lower- level positions were advertised, political considerations may*

*have influenced the appointment of the more senior staff, including two sons of a former Government Member of Parliament” (Singh 2016).*

At the launch of the project, the Government had announced that it had set aside the equivalent of US\$9 Million in the 2011 budget, as well as an additional US\$8 Million through a grant from the Chinese Government to purchase the laptops. The President had promised that the contracts for the provision of laptops would be awarded through public tender:

*“[B]idders will be provided with specifications that are already outlined, which will be open to public scrutiny at the launch of the tender within a matter of two weeks” (Guyana Chronicle Online 2011).*

The first bidding process saw the submissions of three local companies, which were all rejected. In the second process, eight foreign companies and three local ones submitted bids. After evaluation, one company, Haier Electrical Appliances Limited of China was declared as ranking highest and was awarded a contract of US\$7.5 Million to supply an initial batch of 27,000 laptops for the project. According to Finance Minister Ashni Singh, each one the bids for the provision of laptops was evaluated by a technical team and the best one was selected:

*“[The bids were] subjected to detailed valuation against a comprehensive set of financial and technical criteria” (Kaieteur News Online 2011).*

However, the Finance Minister declaration came in contradiction with the President himself, who had suggested in an interview with the Guyana Chronicle newspaper

that Haier was one of two Chinese companies that could be favoured to supply the laptops:

*“[T]he President explained that because the grant is from China, it may be required that a Chinese firm supplies the laptops for that allocation of funds; probably one of two major suppliers – Haier and Lenovo” (Guyana Chronicle Online 2011).*

## 4.5 Effectiveness of OLPF Intervention: Impact on Wellbeing

Despite suggesting that local organisations would play a central role in the intervention, notably through pilot projects, neither the NRDDDB, the Women’s Group nor the Annai Secondary School were involved by the PMO in the implementation of the OLPF in the North Rupununi. Instead, the implementation of the programme was handed over to the Ministry of Amerindian Affairs (MoAA), which dealt directly with Village Councils and the Community Support Officers (CSO)<sup>18</sup>. A single model of intervention was imposed on all communities: the creation of ICT parks or telecentres.

*“Although we were involved in discussions on the OLPF project in the initial stages, we have not benefited from this program. Most of the computers which was handed out was done on the coast” (I6, email exchange October 2015).*

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<sup>18</sup> The Community Support Officers (CSO) were part of a Youth Entrepreneurship and Apprenticeship Programme (YEAP), of the Ministry of Amerindian Affairs. Officially, the YEAP programme aimed to train these CSOs in various skills and to employ them in their community. These youngsters were in regular contact with the Ministry of Amerindian Affairs. The programme was criticised for participating in a system of patronage, by which the PPP/C was rewarding representatives in Amerindian villages and paying them with money from the LCDS (Kaieteur News Online 2014b).

In the communities of Surama and Yupukari, there appeared to be some confusion on the exact nature of the intervention, notably on whether the OLPF laptops would have internet access or not. Whereas one of the top Councillors of the village of Yupukari was under the impression that the intervention would include the provision of internet access, some of the CSOs enrolled by the MoAA had received information in contradiction with the Councillor's affirmations:

*"I understood from the Ministry when they came here that they were just going to make the ICT girl teach whoever is interested on ICT. Then they would start to see whether it is possible to have the internet" (I24).*

*"[T]hey were saying that it would start off without the internet because they want all the villagers – it is all the hinterland villages collecting the laptops – so they were saying that they want the villagers learn how to use computers first. And then they would give us the internet" (I21).*

Another respondent from Surama explained that the people in the Ministry had told him that the laptops would come equipped with learning software:

*"[The Ministry] was saying that it is not mainly for the internet, that is not the purpose of the OLPF. It is basically to study and work materials. So it would come with a built-in library function, so it is a global thing that is going around now that was recommended. So it is gonna come with that programme built in so if you need to search books, history, maps, it will all be in there. So, as he put it, you will have no cause for going on the internet. It is an open source kind of programme, something like a Wikipedia, but I'm not sure. That is what we have*



*heard so far about accessing to computers and that they can be used in so many other ways than going on the internet (laughs)” (I18).*

These differences of understanding by respondents about the exact nature and extent of the OLPF indicate the high level of miscommunication that appeared to surround the OLPF intervention. It was an indicator of the low level of participation of Indigenous communities in the implementation, monitoring and evaluation of the OLPF. By extension, it also raised questions about the effectiveness of the mechanism for stakeholder engagement of the LCDS: the Multi-Stakeholder Steering Committee (MSSC)<sup>19</sup>, which had been set up to ensure participation. An independent audit report on the Guyana-Norway REDD+ agreement for the period October 2010 to June 2012 argued that the MSSC was not effective (Donovan et al. 2012). One of the arguments focused on the composition of the MSSC, which was found to lack representation of Amerindian populations. Almost half of the members were representatives of government ministries and agencies (Government of Guyana n.d.).

Furthermore, during the 75 meetings of the MSSC, which took place between 2010 and 2015, the progress of the OLPF intervention was only discussed a handful of times and none of the issues raised at the MSSC received any response from anybody in the Government (despite the overwhelming presence of government representatives on the MSSC). For instance, an inquiry was made in the MSSC on the status of the OLPF intervention with respect to Amerindian communities on 28 May

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<sup>19</sup> According to the LCDS, all investments concerning Amerindian villages would be subjected to on-going stakeholder engagement through transparent public processes. The MSSC, which included government representatives, Amerindian and civil society organisations, and met every month in Georgetown was one of the main embodiments of the stakeholder engagement. It was a forum where priorities could be set and issues related to the implementation of LCDS investments, such as the OLPF intervention, could be raised.

2014 (MSSC, Meeting 66, 28 May 2014) but the Government's Project Management Office refused to reply on the grounds that it had no responsibility for the project. Yet, the OLPF Project Manager was apparently not invited to give explanations during subsequent meetings. During the implementation of the intervention, little information was released from the official channels of communication into the public domain.

The lack of participation of local civil society organisations raised doubts about the ability of the MoAA to mobilise the OLPF in a way that corresponded to local wellbeing needs and priorities. I had an illustration of this issue in Yupukari, as I interviewed a local tour guide and his wife. When I asked what they thought about the proposed implementation of the OLPF in Yupukari, they suggested that their village did not really need that sort of intervention, as people already had basic knowledge in ICT use:

*"I sort of don't like the idea of it coming without internet connection. I mean even though a lot of kids here know the basics of computers, I don't think they are really versed in any specific area. Just bits and pieces of, e.g. how to boot a computer, how to watch a movie, how to copy files (music, video...) from one to the next and most of all internet searching. They love to search online and if they are really taught on how to go online for research then it is good. They still have a lot to learn about computers but they are not new to it" (I28).*

In summary, notwithstanding the affirmation that an "aid model of community initiated, developed and implemented projects" (Project Management Office 2010) would be adopted, the line of action taken by the PMO and the MoAA resembled

instead the blueprint, top-down approach it had originally sought to avoid: a single model for each community, consisting in setting up telecentres in communities and in providing basic IT training to CSOs, leaving them the responsibility to train other villagers. Consequently, the process behind the OLPF intervention largely deprived Indigenous communities from their ability to *develop, manage and execute* their own OLPF projects (Project Management Office 2010:5). Rather than aiming to genuinely increase wellbeing, people privy to the intervention accused the Government of trying to use the OLPF computers for electioneering purposes (I33), as well as for gaining personal financial benefits:

*“We know what has happened since, they just handed over computers, some of them got stolen etc.” (I33).*

An account from former OLPF Project Manager, Judson Lohmeyer, who had overviewed the project development phase before resigning in November 2010 - two months before the official launch of the intervention - suggested that it was an open secret in the Office of the President that the OLPF was aimed at buying election votes (Mervin 2011)<sup>20</sup>. He was quoted as saying that the project had become “a political

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<sup>20</sup> His resignation occurred following what he said was a discovery that there were two plans: one to outsource the OLPF to a US based company, and the other in which he was involved (Guyanese Online 2011). A disagreement between Lohmeyer and the Office of the President about unpaid salaries, degraded the situation further into a game of public shaming where both parties accused the other of various kinds of wrongdoings in the media. Lohmeyer denounced practices inside the Office of the President, accusing it of bypassing tender procedures; e.g. in the attribution of a US\$15 million fibre optic contract to Huawei. As reward for this contract, he said, the Government had received a US\$50,000 gift from Huawei, which he had advised to use to purchase the initial 142 laptops. A reply from the Office of the President was that the consultant departed from the job because of “poor performance and misrepresentation about his qualifications” (Guyana Times International 2011a), and that he tried to blackmail the Government through the use of unfounded allegations in order to receive his last 30-day payment. The disclosure of his USD 100,000 salary prompted outrages about the fees of foreign consultants, and questions about the value for money it represented for Guyana, and whether the Office of the President had failed to conduct due diligence in hiring Lohmeyer and another colleague of his (Mervin 2011).

gimmick that is turning into a pay-to-play game where everyone is getting big money” (Guyana Times International 2011a).

The failure of the OLPF intervention suggests that, either the Government did not set up the appropriate framework for implementing and evaluating the intervention, or it was following other motives. The primary purpose of the Government in implementing the OLPF intervention was perhaps not to support economic and community development but was instead motivated by political gain. In this framework, the distribution of free laptops may have been a means to sway voters towards supporting the PPP/C at the next general election, a tactic that the PPP/C Government was known to use (Bulkan 2014). The distribution of roles in the transformation process, where both actors and owners were under the exclusive control of the Office of the President, and local communities were cast as passive beneficiaries without further involvement supports this hypothesis. For local communities, it suggests that, had the laptops reached their beneficiaries, the intervention would have been unlikely to enhance the wellbeing of Indigenous communities.

## 4.6 Conclusion

We can therefore formulate a tentative answer to the research question: *how did the OLPF intervention affect the wellbeing of Indigenous communities in the North Rupununi?* The first element of note was of course the lack of efficacy and efficiency of the intervention; the laptops were not distributed due to gross mismanagement and the quantity and quality of the training were insufficient to increase technology

awareness, knowledge and skills, let alone to support community and economic development. Whatever the deeper political reasons behind the failure of the OLPF, the intervention failed to improve the life of Amerindian communities. If anything, the OLPF intervention affected their wellbeing negatively, as it diverted public money away from supporting projects that could have improved their wellbeing. Had it followed its initial intention of supporting community-driven development projects, the purposeful activity system could have empowered Indigenous communities. But in this case, the intervention appeared to be aimed at ensuring that the PPP/C increased its support base in Amerindian territories, through a paternalistic system of patronage aimed at winning the loyalty of Amerindian voters. The fact that the PPP/C lost the May 2015 elections suggests that this strategy may in fact have contributed to exactly the opposite effect the PPP/C politicians were aiming to achieve with the OLPF initiative.

## Chapter 5. Surama Ecolodge Intervention

*“Once there lived two brothers who were magicians and leaders of their community. The elder was named Inskiran, the younger Anekî. One day Inskiran and Anekî invited the villagers to picnic by the lake called warekupî, now known as Surama Lake. They caught a lot of fishes and in the afternoon all returned home together and made a barbecue. The two brothers made their own barbecue, apart from the others. Suddenly their fire flared up and Anekî screamed, shu ra ma ta bî man, which roughly translates as ‘barbecue is burning’. That was the origin of the name Surama” (North Rupununi District Development Board 2014).*



**Figure 14 - Surama Ecolodge office and internet satellite dish**

## 5.1 Sources of Data for the Surama Intervention

Having looked at the national OLPF intervention, let us now turn to the second case study of this first strand of inquiry: the satellite-based internet intervention in the village of Surama. The data collected on the Surama intervention include semi-structured interviews, fieldwork notes, pictures and documentary data. 8 face-to-face, semi-structured interviews were organised during two visits to the community, in March and May 2014. I was also able to meet with a Member of the National Assembly, and founder and Director of the Surama Ecolodge, in Georgetown in June 2014 (Table 10). Many informal discussions were also held, in Surama and in Bina Hill, giving me a better understanding of the implications of the Surama Ecolodge intervention for the community, and the region in general. Additional data in the form of pictures and fieldwork notes were also gathered, notably during a subsequent visit in the community in May 2015. These notes include observations on the dynamics of the ecolodge, as well as activities and events I was able to take part in, such as meetings (community consultation, presentation of personal research, presentation of researcher-led intervention results), as well as events and celebrations (independence day, inter-community football competition). Regular contacts with employees of the ecolodge were kept, notably during the implementation of the researcher-led intervention, which involved two members of the staff (see Chapter 7). This translated in frequent email exchanges, as well as on-going conversations on Facebook Messenger throughout the second half of 2014, 2015 and the first half of 2016. Lastly, some documentary data were collected, such as reports, newspaper articles and blog posts on the ecolodge.

**Table 10 - List of semi-structured interviews held in Surama and Georgetown in 2014**

<b>Code</b>	<b>Date</b>	<b>Place</b>	<b>Means</b>	<b>Roles and/or Sector</b>	<b>Level of most activities</b>
I17	25/03/14	Surama	Face-to-face	Finance Manager/Housewife, Local tourism company	Local
I18	26/03/14	Surama	Face-to-face	Tour Guide, Local tourism company	Local
I19	26/03/14	Surama	Face-to-face	Village Councillor / Secretary	Local
I29	22/05/14	Surama	Face-to-face	Accountant, Local tourism company	Local
I30	22/05/14	Surama	Face-to-face	Field Manager, Local tourism company	Local
I31	23/05/14	Surama	Face-to-face	Manager, Local tourism company	Local
I32	23/05/14	Surama	Face-to-face	Senior Councillor	Local
I34	04/06/14	Georgetown	Face-to-face	Member of Parliament (opposition)	National

## 5.2 Context of Surama Ecolodge Intervention

The village of Surama was formally established in 1974. However, Indigenous social memory suggests that the occupation of the area known as Surama is much more ancient. Being located on the cattle trail that had been established by Europeans and Brazilians between the South Rupununi savanna region and the coast of Guyana at the end of the 19<sup>th</sup> century, elders recall that rangers occupied the area. During the golden age of balatá production, until the middle of the 20<sup>th</sup> century, some families also settled in the area to work for the Rupununi Development Company, a public enterprise, which was running balatá-bleeding operations. Elders recall however that the area was struck by several epidemics against which traditional medicine was ineffective, killing many residents. The economy of the locality was also affected by



the moving of the Rupununi Development Company further north, as well as the end of the government's support to the cattle trail, following the Rupununi uprising in 1969, which saw a brief but bloody rebellion that led to the decline of the region's economy (Colchester et al. 2002).

In 1974, a group of friends and families from other North Rupununi communities decided to go back to Surama, and implement a cooperative system to "better manage resources and harmony amongst neighbours" (Surama Ecolodge 2015). Almost half a century later, Surama has become a thriving community. It has a population of approximately 300 inhabitants from multiple ethnic backgrounds, with a majority of Makushi people. The population is spread across 52 households. Surama is one of the five satellite villages of the demarcated Annai Indigenous territory. It extends across 12.95 square kilometres of savanna land, bounded by the Iwokrama Forest protected area, the Burro-Burro river and the Pakaraima mountain range. The village is accessible by land via an 8 km trail, essentially maintained by the community, linking the Georgetown-Lethem road to the edges of the village. It also features an airstrip for the landing of small planes. The economy of the village relies mainly on agriculture, lumbering, fishing and tourism. In terms of infrastructure, it features a nursery and primary school, a health post, a carpentry centre, a cassava processing house, a church and a few other public buildings, including the Village Office, a resource centre, a rest house and an ecolodge for tourists (Box 6).

#### **Box 6 - A short history of the Surama Ecolodge**

Prior to 1996, the rare foreign visitors that came to Surama used to sleep in the community resource centre, which was located by the Village Office at the entrance of the village. In 1996,

a group of students from the United States came to Surama to experience life in a Makushi village. They found their experience enriching and paid for their stay, much to the surprise of the villagers who were not expecting anything in return (Marks 2010). This was a defining experience in the emergence of the idea of tourism as an income-generating activity. The community, under the impetus of a charismatic leader, Sydney Allicock, decided to invest in a rest house for visitors.

*"We didn't know how to make a guest house. When the visitors came we had them guessing." Sydney Allicock in Marks (2010).*

In the 1990s and early 2000s, as for most communities of the North Rupununi, the only access to telecommunications in Surama was through High Frequency (HF) radio. Although these radios provided a cheap and convenient way to communicate with nearby communities, they proved less useful for supporting the tourism ambitions of Surama. In an article published in the magazine Caribbean Beat, Nicholas Laughlin, a tourist who came the region in 2006, recalls the difficulty to plan his visit to Surama via radio, and the surprise he was met with when he arrived in the community:

*"I soon realised why [the person in charge of the rest house] looked puzzled — it turned out that the message announcing our imminent arrival had not got through on the radio phone" (Laughlin 2006).*

The same year, the Tourism Committee of the Village Council subscribed to a satellite-based internet service. The satellite dish was originally installed in the resource centre, close to the rest house. The main rationale for the installation of internet access was to improve the communication of the Village Council, and to allow the Tourism committee to manage the rest house more efficiently. The satellite dish remained in the resource centre for a few years. But in 2008, two years after the installation of satellite-based internet and nearly 12 years after the construction of the first rest house, Iwokrama and an organisation called Trek Force helped Surama build a brand new ecolodge, in order to improve the facilities for tourists. New buildings were erected on a hill overlooking the Iwokrama forest, approximately 30-40 minutes walking distance from the centre of the village. Initially, the satellite dish remained in the resource centre and the new ecolodge was equipped with a High Frequency (HF) radio. The communications received through internet were forwarded to the ecolodge via radio waves. Conversely, if the ecolodge needed to send a communication, they would contact the resource centre on the radio, which would then send the communication via internet.

However, as inquiries and bookings increased, the delay in the transmission of information between the village resource centre and the ecolodge was found to affect business communication. It was then decided to move the internet dish from the resource centre to the ecolodge, on the periphery of the village (14).

Figure 15 captures my understanding of the Surama situation of interest (April 2015).

On the top right of the picture, the ecolodge is described a key, albeit geographically remote, resource for the community (situated on a hill, on the outskirts of the village centre). It attracts foreign tourists, researchers and students, and generates an important source of income for the community. The Allicock family, at the centre of the picture, represents the dominant family in the community. Descending from one of the founding fathers of Surama, it plays a key role in the community. Several members of the family are sitting on the Board of the ecolodge, as well as holding positions in the Village Council. Sydney Allicock, the founder of the ecolodge, is also an elected representative at the National Assembly, one of the highest positions held by an Amerindian in Guyana. The rest of the community is largely involved in their traditional subsistence and cultural activities, which include farming and fishing, as well as dancing (Surama has a very active culture group). At the front of the picture, the unused HF radio is a reminder of a not-so-distant past, when it would constitute the main telecommunication device.

The leadership and vision of Sydney Allicock, former Toshao of Annai (the larger administrative region involving Surama) was determinant in setting up the ecolodge and the satellite-based internet access, despite the initial lack of capabilities in tourism management and ICT use in his community. The 1990s were a decade of great changes in the North Rupununi, with the opening of the Georgetown-Lethem



In Surama, the satellite-based internet intervention appeared inseparable from the ecolodge, which was itself intertwined with the community of Surama (see Box 6).

The local vision of development, as displayed on the website of the Surama Ecolodge, was expressed in the following terms:

*“We will develop, own and manage a community-based ecotourism business by constructively [using] the natural resources and our traditional culture in a socially appropriate manner; we will provide opportunities for our people through research, training and employment; we will work with our partners for mutual respect and benefits” (Surama Ecolodge 2015).*

Arguably, the ideas reflected in this vision placed the wellbeing of the community at the centre of the *raison d’être* of the ecolodge. In supporting tourism activities in the community, the satellite-based internet intervention therefore also supported the wider development objectives of the community of Surama. But by bringing ICT to the community, the intervention was likely to have other implications for the people of Surama, including potentially negative ones. Through the interviews and general immersion in the fieldwork, I was able to ascertain different perspectives on the role of the satellite-based internet service in the community. As a preamble nod to complexity some of these relevant perspectives are listed here as simple systems:

*A system to support a community-based ecotourism business, by way of marketing the community’s tourism potential online, in order to generate research, training and employment opportunities for community members.*

*A system to empower the Surama community, by way of providing them with satellite-based internet access to information, in order to increase their political freedom and that of the community.*

*A system to alienate non-ICT users, by way of increasing the ICT capabilities of those who work at the ecolodge, in order to further reinforce the control of the Allicock family over the ecolodge.*

...

The simple systems proposed above illustrate some of the diverging perspectives that I was able to perceive during my fieldwork in Surama. Arguably, one might be able to unearth some additional perspectives if she/he were to interrogate a larger amount of stakeholders within or outside of the community over a longer period of time. These perspectives helped inform my own consideration on a potential *ideal* PQR in order to proceed to the boundary evaluation. The following simple system definition is therefore proposed as representing the espoused views of the owners of the intervention (Box 7).

**Box 7 - Surama intervention simple system (ideal)**

A system to...	Support the communication and activities of the community-based ecolodge
By way of...	A subscription to a satellite-based internet service
In order to...	Provide opportunities for the people of Surama through research, training and employment, and work with partners in a relationship of mutual respect and benefits

Expanding on this definition using the CATWOE mnemonic might lead to the following model:

- Customers: the workforce of the Surama Ecolodge
- Actors: the Village Council Tourism Committee and the Board of the ecolodge
- Transformation process: the installation of satellite-based internet access
- Worldview: a vision of a community-based development model for increasing opportunities in the community
- Owners: the community of Surama
- Environment: lack of infrastructure and high cost of service

## 5.4 Efficacy and Efficiency of Surama Intervention

### ***5.4.1 Supporting the Activities of the Community-Based Ecolodge***

Data collected in Surama, in March 2014 and May 2015 indicated that the intervention had played a central role in the ecolodge communication and the development of its activities. The use of internet notably brought online visibility to the ecolodge, particularly for international clients. These clients were able to learn about the community-based ecolodge through its website, social media and specialised tourism platforms, such as Trip Advisor:

*“More people get to know the lodge through the internet” (I17).*

Most of the business communication and marketing took place online, through its website, Facebook page, and via email. The staff of the ecolodge highlighted the importance of internet use in the day-to-day operations of the business:

*“I get emails every day that I need to check: bookings, transfer, cancellations,...” (I19).*

*“That’s how we get all our reservations. By emailing.” (I31)*

During my fieldwork in Surama, I was able to witness the booking system that the staff was using. A calendar had been drawn with chalk on a large blackboard to indicate arrivals and departures of clients. Most of the reservations were done or confirmed through email, and subsequently added to the blackboard for everyone in the ecolodge to see. Coordination with partners was important too, as clients would generally visit several communities and lodges during their stay in the North Rupununi. Through the use of satellite-based internet, the staff was able to coordinate their activities with local partners and organise transfers:

*“I think it is important because of the business we are doing [...] People can contact each other directly so it is very important” (I30).*

The majority of online communication was done through social media, in particular Facebook, which was perceived as a more direct and accessible means of communication. In addition, it was the place where users spent the majority of their time online:

*“A lot of people are on Facebook. So if we don’t find them on email etc. we go on Facebook and here they are! Some people in Georgetown, for instance, you don’t find them on their regular emails... Even [Hidden name] he is on Facebook every day. You can catch him right there. You have to catch people and for that you have to know where they are!” (I30).*

*“Yes because when I send a mail I don’t know when the person will see it. So the thing is to go on Facebook and you get the person to go back on his mail” (I17).*



Incidentally, internet communication also allowed people to quickly reach out to relatives and friends living outside Surama, and important information was equally flowing in more quickly:

*“It is good because you can be here and talk to your friends and family in times of emergency and other important issues” [...] It is a better way of understanding each other than moving around [the region], having to travel from here to another place just to seek information. It reduces the cost of travelling and saves time and money [...] it has made our life a little easier for us because many people, like our families, who have accidents and deaths and so on... sometimes it would take weeks before you heard that somebody died ” (I30).*

#### **5.4.2 Efficiency of the Service**

##### ***Access limitations***

Access to internet was however affected by a series of performance, cost, and energy related issues. I personally experienced the poor performances of the service, spending long hours trying to connect my laptop or my smartphone in the ecolodge office. The service was frequently unavailable and, the rest of the time, so slow that a frequently asked question by people around the office: ‘you getting through?’, had become a joke among the ecolodge staff. Bandwidth was pointed as the main culprit behind the poor performance of the service, but no one around the office seemed to know precisely how to solve this problem, nor did the internet service provider (ISP) appear very helpful:

*“I have no idea why. We are just told that the bandwidth is being used up. So we*

*don't know... We only have assumptions but there is no way to say what is happening" (I31).*

*"That's what [the internet service provider] said but to me the speed remained the same. When I tell them they say we have so much to download and upload but if we want to increase the speed they say we have to upgrade it but the price will rise again. And we haven't done it because [the speed] remains the same!" (I29).*

In addition to poor and variable performance, the cost of installing and running the satellite-based internet was arguably very high. With installation costs varying between US\$1000-2000, depending on the internet service provider (ISP), and monthly fees above US\$300, maintaining the service over the long term represented a significant investment and liability for the community:

*"The cost of paying the people that own the satellite dish is really a cost [...] That is an issue because not only in Surama people complain. In Bina Hill, Rock View it is the same" (I31).*

*"[Y]ou don't get the full benefit. Because it is slow, or sometimes it won't even come on for a half day. And you are paying... I would say you are paying 10 [Guyanese] dollars a minute and for an hour you wouldn't get on! Fuel is burning all that time" (I30).*

Energy provision was another issue that limited access. Although the ecolodge was equipped with solar panels, their batteries needed to be replaced. At the time of this study, in 2014 and 2015, the ecolodge was using a fuel-powered generator to supply

the electricity needed to operate internet and computers in the office. But with fuel prices close to US\$2 per litre, almost twice more expensive than in the capital Georgetown, the ecolodge could only afford to keep the generator on for 4-5 hours a day, during office hours, and on week days.

### ***Limited ICT capabilities and uneven distribution of ICT in the North Rupununi***

During interviews with the ecolodge staff, I was informed that the workforce had benefitted from ICT training in the early days of the intervention:

*“I learnt right in Surama because we had a major course the very first time we used computers. It was desktops then, so the first time someone came in to teach us for four or five months” (I17).*

However, it appeared that the training had been discontinued soon after the launch of the intervention, and capabilities had not necessarily evolved with the technology. Consequently, there appeared to be a lack of ICT capabilities that affected the efficiency of the intervention. This was manifest in the lack of local ICT experts with the ability to monitor bandwidth consumption, update or clean up computer malwares (removing cookies, automatic updates and so on), and prioritise or restrict access to the network indicated a shortage of technical ICT capabilities:

*“Like you know right now the system is not working properly I would say. I don’t know for what reason. It has been going on for the longest while now, the bandwidth is limited and we are hardly getting on in the morning and sometimes in the afternoon. It is really difficult. Before in the morning or the afternoon you had no problem with the computers or anything. You just used to get access to*

*the internet but now its not working properly” (I31).*

Furthermore, the North Rupununi had become a melting pot of different ICT, including HF radios, AM/FM radio, telephones, cell phones, television and satellite-based internet but none of the communities had the same combination of ICT:

*“I don’t get radio Paiwomak. Some people are more isolated and don’t get cell phones or the internet because they are so remote” (I17).*

Consequently, communication had also become more challenging for certain people:

*“[My father] said now you have the internet, you have telephones, you have everything! And still, no proper communication! He said that before, when you had just the radio set and letters, the vehicles used to drive by your door and deliver your letter. And you used to get all the information. But now you get all those things to communicate but still... he says it is worse!” (I29).*

Or these others:

*“Yes it has improved communication but we still have a big communication issue. I don’t know for what reason. I think one of the reasons is that people read emails and don’t respond to them immediately and forget about it. I think that’s the issue” (I31).*

*“Even though we have all the fancy communication systems now, you find that there is still mix up between persons. You might send a message but people don’t open their net for some reason. So even though we had the change it is still not really to the standard that you would expect it to be” (I30).*

*"I too think that it (has made it) worse! Because someone sends me a mail, I have 10,000 emails to answer and I forget about the very first email if I don't write it down on a memo, or if I don't print it to give you your message. If I see you instead I know I have to pass the message to you etc. So it is good but at the same time it is bad" (I17).*

### **5.4.3 Increased Opportunities**

Since the construction of its first rest house, in 1996, the village has become a trailblazer for community-based ecotourism in Guyana, winning international recognition and a prize from the Caribbean Tourism Organisation Excellence in Sustainable Tourism Award in 2011. Despite the poor efficiency of the service, the ecolodge activities had grown and it was employing up to 70 members of the community, directly and indirectly. These included hospitality staff, cooks, drivers, guides, artisans, as well as farmers, fishermen, hunters, and maintenance workers. Tourism-related activities constituted approximately 60 percent of the income of the community, and 75 percent of Surama households derived some income from tourism (Marks 2010). In addition to the income generated, it also facilitated the visit of researchers and students as well as tourists, and contributed to a process of knowledge exchange as much as it expanded the social networks of community members. In that sense, it had been successful in increasing research, training and employment opportunities in the village.

## 5.5 Effectiveness of Surama Intervention: Impact on Wellbeing

The intervention had several impacts on the wellbeing of the community of Surama, with political, social, economic and cultural implications.

### *Political freedom*

The practices of the Government, including the spreading of misinformation, rumours, slander and the use of scare tactics in Indigenous villages were notorious in Guyana (Electoral Assistance Bureau 2012)<sup>21</sup>. Whereas the North Rupununi was marked by limited access to ICT, the installation of satellite-based internet represented more than the possibility to access markets or to communicate faster. It was an empowering move, from a community (in particular a leader), which had decided to take control over its own destiny, through the adoption of modern tools and the adaptation to changes occurring in the region. The satellite-based internet allowed users in the community to access information about national and regional political developments, including on policies that concerned the Amerindians, such as the LCDS land-titling project. This information was notably found on social media, online newspapers, and occasionally shared with the rest of the community in public meetings:

*“[W]e join a lot of pages, for instance the NRDDDB page, the Yupukari... and then*

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<sup>21</sup> On 15 May 2014, I personally witnessed some of these tactics at a meeting organised by the Ministry of Amerindian Affairs in the community of Katoonarib, South Rupununi. The meeting followed the disapproval of the Amerindian Development Fund by the opposition, on suspicion that these funds were used for buying votes. This disapproval directly threatened the payment of the salaries for the CSOs, so the MoAA was touring Amerindian communities to try and rally them to protest against the opposition parties accusing Amerindian representatives – such as Sydney Allicock – of having betrayed their constituents.

*the Amerindian page, where they update with what's happening with the Amerindians all over Guyana, what the Government is doing on us. This page is especially looking at titled lands, who is getting titled lands, management plans etc. I check that page everyday. You also find parliament speech, who fell asleep (laughs). I put these on my wall. With the NRDDDB it is updates of Toshaos, of Project COBRA and all those things. You find a lot of comments about what the Government is doing on us etc." (I17).*

*"As a leader, sometimes you see information in the paper that might be of interest to the people, you might ask for a few minutes at the public meeting to read the information and see if the people understand what it is all about. That is helping educating people with what's happening as well, sharing information..." (I31)*

For instance, reports on the debates taking place at the National Assembly were sent from Georgetown by Sydney Allicock via internet:

*"He just sends us the... whatever you call it and we go on the internet and get it. He sends us a message about what is being discussed and we get it" (I17).*

In an interview held with Sydney Allicock, he outlined the importance of internet access for the exercise of political freedom, suggesting that if the people of Surama were amongst the most critical toward the action of the Government in the North Rupununi, it was largely due to their internet access:

*"[T]hose communities that are having access to the internet they have been asking the right questions to the dissatisfaction of the authorities. And they look*

*upon these very persons who asked these questions to be on the opposite side, which is not necessarily the case. They are asking because they are more informed and they want to get the truth out of the administration, which is misleading them in this whole information process."*

The Government was apparently taking this matter seriously too, as was suggested in an anecdote heard in the ecolodge. The story suggested that there had been a previous attempt at installing internet access in Surama, at the end of the 1990s, and that the Government had intervened to dismantle it:

*"[W]e had like this whole thing about Surama students communicating with other people abroad. So when government people visited us like they do once in a while and they were telling us about what was happening in the outer world we were really fighting back. So the Government found we were too much ahead and took it from us. That is how we lost our first internet. They felt threatened. They feel that we are going to sell out to someone else. It wasn't the case, we were just happy to have communication (laughs)" (I17).*

### ***Economic Impact***

The ecolodge had a defining impact on the economy of Surama, and helped the community address one of the big challenges facing Surama as well as other communities in the North Rupununi, that of the need to provide options to a growing, and increasingly educated population. Although the manager of the ecolodge recognised that more needed to be done in the community to create jobs:

*"You know, the population is growing as well. We don't have enough for the*



*villagers to do here. So we have to create more opportunities within the community so that we would have them here as well. But if there are no job opportunities in the community then they have to go elsewhere to work. All the communities would have to do the same” (131)*

In this context, the use of internet by the Surama Ecolodge was empowering, as it provided the community with greater control over their product, for instance in marketing it or in setting the price they wanted to charge to their customers. The international reputation of the ecolodge, combined with its internet access meant that it was not dependent on a specific or a small group of tour operators acting as gatekeepers. In contrast, another community recently involved in tourism – *Rewa* - was much more dependent on tour operators. And while one tour operator was charging its clients several thousand US\$ to organise sport-fishing trips in that community, only a small fraction of that amount, about 20%, was paid to the community, the rest of the money being used to pay intermediaries and the tour operator fee. This suggests that internet access contributed to empowering the community of Surama, through the ecolodge.

In addition, the Secretary of the ecolodge also had a pivotal role between the Village Council, the ecolodge, and people outside the community. Attending the meetings of the Village Council, she was in charge of passing on incoming messages to the Senior Councillor and of dispatching messages from the Village Council to partners in the tourism industry, the NRDDB, as well as government agencies, using internet:

*“[A]s a Village Councillor I also have a secretary and so anyone who wants to contact me I just say send it to the Secretary of the ecolodge, she is also the*

*Secretary of the Village Council working for the lodge. So it makes it easier when she receives something that she would send it down to me” (I32).*

### ***Social and Cultural Impact***

Although the intervention was essentially endogenous to the community, social rules and politics were also at play at the local level. The satellite-based internet revealed the existence of new divisions and gatekeepers. First, there appeared to be a generational gap between young people, who were generally considered ICT capable; and the elderly, who were lagging behind the younger generation in that aspect:

*“Yes. The younger people do. But the very old people like my grandfather they still use the newspapers. And they would get it from a friend, and it would be like five months ago papers (laughs)” (I17).*

*“It is difficult for the older people but the younger ones learn quickly. It is just for the older ones because they don’t want to make an effort to use it. Or like me, I just know how to put the computer on, open my email, read and respond to my emails and turn it off. And if I need to find something I would just Google it but that’s about it. I never made the effort to learn anything more than that” (I31).*

Second, internet access was essentially reserved to the people working at the ecolodge. Other members of the community who wanted to use it were asked to pay a fee of US\$3 per hour. In practice, however, few villagers were able or willing to pay that amount as was confirmed by one of the ecolodge accountants:

*“They have to pay to use the service. Because we have to pay, the business here has to pay to the person providing the service. And it is very expensive! [...] If I do*

*the research myself I wouldn't charge because I would be on duty and I would only ask them to pay for the printing (for the ink and the paper). So it comes up to 1000 GYD [USD 5] or 700 GYD [USD 3.5] but some parents still find it hard for them to pay that" (I29).*

Setting a price appeared more as a way to filter out, or limit the amount of people using internet for leisure, than to really help the ecolodge pay for its internet bill. It set a priority on the needs of the ecolodge over those of individuals. But in this system, the ecolodge staff was also handed with a new privilege over their fellow villagers, able to discretionarily grant access for free, for instance to schoolchildren doing research:

*"Yes my son uses it. He goes there if he wants to do some research, when he prepares his exams" (I32).*

*"Sometimes students who do research in various areas they come here and we help them. They come when they have exams or projects and they need to find information" (I19).*

*Most of the children use it for doing their research for a project or some subject they have to do because there are not enough textbooks and parents can't afford to buy these textbooks as well. So it is cheaper for them to come on the internet and search for the information they need." (I31).*

The highly controlled environment in which the internet service was set meant that the wider impact of the intervention on Amerindian culture had remained under control, although this was changing fast with the increasing penetration of mobile

phones. As local villagers were increasingly exposed to ICT and foreign cultures, they were also increasingly likely to reduce the practice of their own culture:

*"I was just telling that the people don't want to go in the farm. I am very strict with my children. My daughter wants to develop a Facebook account because of... [A rock band]. I said I'm going to develop it but you are not gonna stay a 100% on that page. So she comes and check on it sometimes. So you have to have a serious control on social media, it is not like us in the past. We are new to it, but them they are born with it. So they are faster to learn. It drives me crazy but sometimes she teaches me" (I17).*

*"But we have a lot of children coming out of secondary school now and they know about these things and want to have access, you know. I am sure that [in a few] years' time you will see a lot of difference in terms of what we are talking about now. Because the younger people learn faster! Like my little son asked me "mommy you know how to do this?" I said no and he replied "you had it for so long and you still don't know!" (laughs)" (I31).*

This was seen as a potential threat by a majority of respondents, although people also realised the opportunity ICT represented to document their lifestyle:

*"For me what I'm trying to do, the ecolodge is somewhat on a top burner right now and a lot of people know about it. Still there are some people that don't know anything about it and we have things that people have never seen, they never knew we had it. So if we can get pictures, or do a little write up. Pictures to show. People would be interested and you will find that a lot of people ask*

*questions and you will get more people interested in coming to the community and learning about the history. And in that way it goes back also to teaching them that you can live with nature and at the same time live in the modern world and not just forget the true nature behind you. So it's a way of finding the right balance between both" (I18)*

## **5.6 Conclusion**

The evidence gathered in this inquiry showed that, despite clear efficiency issues, the community of Surama succeeded in harnessing the satellite-based internet service to support the activities of the ecolodge. The income generated at the ecolodge contributed to make Surama one of the wealthiest communities of the North Rupununi and to provide employment and training opportunities to villagers, contributing to their overall wellbeing. In addition, the intervention appeared to be associated with increased political and economic freedom in the community. But these successes had also come with a certain social cost, raising inequality and creating an artificial division between those who had access and those who didn't as well as between those who had the skills and those who didn't. In other words, although the internet service appeared to be providing a wide array of services to the community, only a small percentage of individual community members really had the possibility to directly use it personally. Several barriers prevented the rest of the community from using it, among which the location of the satellite dish, away from the community centre, its operational framework and, perhaps more importantly, its price and the timing at which it could be accessed.

## Chapter 6. Yupukari Caiman House Intervention

*“Many many years ago there lived an old man name John Bull. One day, he went out fishing to the river when suddenly he heard a noise from beyond. There he saw two tigers fighting. He was standing so quiet to see what was going on. The two tigers started talking with one another asking what their name was. One of them said, ‘My name is Yupu’ and the other said, ‘My name is Kari’. Before this Village got its name Yupukari, both of them got tired of jumping and saying Yupu, Yupu, Kari, Kari. After seeing everything what had happened, the old man went home and told a few people what had happened. He said, ‘We will name our place Yupukari’. After a long time it became a Village. It is a big mission now. This is how we found and formed our Village Yupukari” (NRDDB 2014).*



**Figure 16 - Yupukari Caiman House with satellite internet dishes in the front, and the library on the right (May 2015)**

## 6.1 Sources of Data for the Yupukari Intervention

The data collected on the Yupukari intervention include semi-structured interviews, fieldwork notes and pictures, surveys, as well as documentary and digital data collection. 8 semi-structured face-to-face interviews were held in Yupukari in April 2014, involving a range of different profiles, including library users, community support officers (CSO), village councillors, Caiman House staff members and one former volunteer and ICT expert. An additional interview was held on Skype with the founder of Caiman House (Table 11). Some of these interviews were furthered through additional face-to-face conversations, email exchanges and Skype calls in the second half of 2014, and in 2015. Fieldwork notes and pictures were taken during my visits to Yupukari in April 2014 and May 2015. These notes feature observations of the dynamics in Caiman House, in particular in the public library, as well as reflections on my participation in local activities, such as a caiman-catching survey mission, and a Board meeting. I also took reflective notes on the training I organised in April 2014 on the opportunities and threats of internet use, during which I was able to survey 9 participants. Additional documentary and digital data were sourced, such as newspaper articles, blog posts from travellers, as well as the Yupukari community development plan.

**Table 11 - List of semi-structured interviews held in Yupukari in 2014**

Code	Date	Place	Means	Roles and/or Sector	Level of most activities
I20	05/04/14	Georgetown	Skype	Information Scientist / Founder of Caiman House	International, national
I21	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I22	15/04/14	Yupukari	Face-to-face	Librarian	Local

I23	15/04/14	Yupukari	Face-to-face	Vice-Toshao	Local
I24	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I25	16/04/14	Yupukari	Face-to-face	Tourism professional / Board Member, Caiman House	Local
I26	16/04/14	Yupukari	Face-to-face	Assistant Project Manager, Caiman House	Local
I27	17/04/14	Yupukari	Face-to-face	IT Expert/Board Member, Caiman House	Local
I28	18/04/14	Yupukari	Face-to-face	Village Councillor / Board Member, Caiman House	Local

## 6.2 Context of Yupukari Intervention

Located southeast of Surama, along the Rupununi river, the community of Yupukari is about twice the size of Surama: it comprises 68 households for a total of 550 inhabitants. With Quatata and Fly Hill, two satellite villages of Yupukari, these communities total over 800 inhabitants. The village is set on a hill overlooking the Rupununi savanna, about 50 kilometres east of the main Georgetown-Lethem road. According to an elder, the village was founded over 100 years ago by Anglican missionaries who travelled from Georgetown up the Essequibo river via boat, and then up the Rupununi river. A school and a church were established and the Amerindians who lived dispersed in the surrounding areas gradually came to live closer together (Sutherland 2013).

The economic activities in Yupukari include tourism, farming, sewing, fishing, as well as subsistence hunting and gathering. The village features a nursery and primary school, a health post, a teacher's quarter, a church, a market, a village office, a couple of shops, a bar and, since 2014 a workshop equipped with professional carpentry tools that were donated by a foreign NGO. However, one of the central and defining



features of Yupukari is its guesthouse and public library, hosted within a building complex known as 'Caiman House' (Box 8). In terms of ICT, the community features several HF radios, as well as one public telephone and some television sets with satellite dishes for receiving Brazilian programmes. Despite the absence of a mobile phone network in the community, many people own mobile phones as well:

*"We also have the landline GT&T telephone booth here. You have GYD 500 or 1000 [USD 2.5 or 5] phone cards and when you make a call they tell you how much you have left. People also have cell phones but they can't make calls because there is no service area here, unless if you go three miles away from here you can get a GT&T service area because Annai has a tower. I understand that Karanambu, which is 12 miles from us has got service. 20 miles down you could get Digicell service [...] In terms of television I know 4 or 5 families that have dishes but there are more! And in this community the majority of people have portable DVD players because it is cheaper" (I23).*

#### **Box 8 - A short history of Caiman House**

The history of Caiman House begins at the end of the 1990s, when the village was chosen as a basecamp by a handful of foreign researchers interested in the study of the endangered black caimans (*Melanosuchus niger*) of the Rupununi river. One of them was a North American researcher at the Reptile Department of the University of Saint-Louis, Missouri, and his wife who was a social worker and information scientist<sup>22</sup>. The couple fell in love with the region and its inhabitants and soon started thinking of moving there with their son. In the early 2000s, they signed an agreement with the Toshao of Yupukari, according to which the community allowed them to build a house in the village in exchange for training villagers in black caiman research and for helping to improve literacy. The couple moved to Guyana in

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<sup>22</sup> Hereafter referred to with the code: I20

2005. Prior to moving to Yupukari, I20 and her husband made an assessment of the situation in the community, during which they found the primary school to be severely lacking resources, and judged the few books in use to be inappropriate for the local needs and cultural context of the children.

*"[I20] described [the school] as containing a few tables and chairs and teachers were basically working with one book provided by the Government and teaching about Roman numerals" (Extract, personal notes, 5 April 2014).*

In the mid-2000s, few employment opportunities were available in the village, and a large majority of people relied on subsistence for their survival. Electricity and ICT access were limited. I20 recalled seeing one High Frequency (HF) radio in the health post, and one TV dish in a villager's home. Due to the proximity of Yupukari to the Brazilian border, some of the villagers would occasionally access internet when travelling to Brazil, where ICT diffusion was much more developed. But computers and laptops were still largely uncommon in Yupukari, notably because of the lack of electricity and ICT capabilities.

Looking to establish the first public library in the North Rupununi, I20 contacted some US publishers to purchase large quantities of books. A container was shipped from the US, which included 5000 books, equipment for black caiman research, personal items for the family, one HF radio for local communications as well as a satellite-based internet dish they had purchased from a North American company. But when the container arrived in Yupukari, the dish had a fault, which could not be fixed. As a consequence, they did not have internet access until a contract was signed with a local internet service provider (ISP), in 2006, for the installation of a dish and the provision of satellite-based internet at Caiman House.

A year after their arrival, having already constructed a small house, I20 inherited a large sum of money from a family member in the USA. She decided to invest some of that money in expanding their activities. A public library and a guesthouse for hosting researchers and tourists were constructed, forming a multi-purpose complex that became known as 'Caiman House'. However, the waves I20 and her husband were making in the region were not going unnoticed. In a bid to raise additional funds for their project, they published several blog posts and a series of pictures on their website. These posts aimed to raise awareness on some of the needs of the community, but they also apparently upset some people:

*"I think it was something on the website. A statement that the Government did not like.*

*There was some reference to the fact that there were not enough resources for the school. Somebody probably made this underground... a report about her. They were probably waiting for an opportunity to kick her out because she was doing a lot here" (I28).*

Following these online publications, the news of their activities reached the Ministry of Immigration, which refused to renew their visa. The family was expelled from Guyana and returned to live in the USA just months after having completed the Caiman House transformations. The same year, a Guyanese non-profit corporation, *Rupununi Learners Inc.*, was hastily registered to manage Caiman House assets in the village, with a Board composed of Yupukari villagers. In the USA, a sister organisation was also founded by I20: the *Rupununi Learners Foundation*.

Figure 17 represents my personal understanding of the Yupukari intervention interrelationships (April 2015). The centre of the picture features the Caiman House complex, the village office – and proposed location of the OLPF ICT park - and the primary school. Pupils are seen heading from the primary school to the public library. Arrows from the village office illustrate the telecommunication options that are available to the councillors, including the public phone booth and the satellite-based internet service in Caiman House. At the bottom left corner, the HF radio is used mostly to communicate with the satellite villages of Quatata and Fly Hill, as well as with other nearby localities without internet access. The top left corner of the picture shows some of the activities taking place at Caiman House, including black caiman research, and related tourism activities. It also shows the American founder of Caiman House and current benefactor – I20 - who lives in Saint-Louis, USA and keeps on supporting the structure financially. The bottom right corner shows some emerging issues associated with internet use, including access to information through search engines, as well as exposure to pornography and violence.



project in Yupukari, and these youngsters were the main intended beneficiaries of the intervention. Foreign volunteers were recruited to help train the local population in using the laptops and internet.

While it is unclear to what extent the villagers were involved in the planning of the Caiman House intervention, or were able to voice their concerns, there are some indications that consultations and dialogue took place with certain stakeholders. Conscious that an intervention on education could be perceived as a challenge to the authority of the schoolteachers, *I20* invited them to participate to a weekly lunch meeting at Caiman House. During this meeting, they were able to talk through their interrogations and ideas, and vent potential frustrations related to the intervention, and its implications for them.

## 6.3 Yupukari Intervention: A System of ICT for Education

Having explored the context of intervention and mapped some of its interrelationships, the following step consists in producing a simple system definition to describe the purposeful activity system under study. In doing so, participant observation and interviews carried out in the community enabled me to identify the following potential perspectives:

*A system to facilitate the communication with research institutions in the US by way of the installation of satellite-based internet, in order to organize the visit of foreign researchers in Yupukari and advance scientific research on wildlife in the Rupununi.*

*A system to improve children's literacy, by way of educational programmes and*

*ICT equipment, in order to increase their eligibility to attend secondary school.*

*A system to distract the pupils from the official school programme, by way of offering them access to activities and fancy equipment in the Caiman House library, in order to undermine the authority of the schoolteachers*

*A system to learn technology use, by way of using a computer device in order to communicate with the rest of the world and retrieve information from Google.*

...

This non-exhaustive list of simple systems illustrates once again the existence of contrasting perspectives on the proposed transformation process at play in the Yupukari intervention, and some of the deep-seated motivations of each stakeholder involved in the process. Therefore, in producing a simple system that might best describe an *ideal* purposeful activity system and accommodate these contrasting perspectives, I referred back to the original intention of the intervention owner and the way the transformation process was framed. Contrary to the Surama case study, where the intervention was clearly framed as aiming to help support the activities of the ecolodge, in order to provide more opportunities for people in the community, the Yupukari intervention was primarily framed as being about education and communication, as one former volunteer recalled:

*“When I first arrived, I arrived maybe on the day they were setting up the satellite dish. So it was brand new and nobody knew what computers were and they had a few conversations with the [American couple] about what it would be or what it could be. But it was all magic. It was all very... foreign, I guess. So you*

*had a few people that would understand that it is access to the rest of the world, or it's a window to access farther outside what they had before, but only a few people were really interested. These were the librarians who took on that role, they understood it as "communication and access to education". And they were put into sort of a training on the internet with that in mind. It was a tool to be used to find resources to support the library and support your personal development as well as developing what you offered in the library [...] The majority of the community who wanted to see the internet or understand computers was in the library. It was already pitched and presented as an education centre. So the internet was within that" (I27).*

In light of the above, the following simple system definition (Box 9) therefore best reflects my own interpretation of the *ideal* purposeful activity system at play when the intervention was launched in Yupukari, in 2006.

**Box 9 - Yupukari intervention simple system (Ideal)**

A system to...	Provide access to online information, (tele)communication, and educational content
By way of...	An ICT corner in a publicly accessible library and the development of educational activities
In order to...	Increase literacy in the community, with a particular focus on schoolchildren

Expanding on this definition using the CATWOE mnemonic, the purposeful activity can be further enriched the following way:

- Customer: the villagers of Yupukari, in particular the schoolchildren
- Actors: the founder of Caiman House, with the help of foreign volunteers
- Transformation process: supporting the development of informational capabilities in Yupukari, in particular, information literacy and ICT capability
- Worldview: an information-centric vision of development associating education with emancipation
- Owner: the founder of Caiman House (*I20*)
- Environment: local resistance to change, challenging environmental and geographic conditions, lack of energy supply, unsupportive and suspicious government

## 6.4 Efficacy and Efficiency of the Yupukari Intervention

### ***6.4.1 Public Access to Information, Communication and Education***

Evidence gathered during fieldwork suggests that the intervention succeeded to attain the objective of providing access to online information, telecommunications and educational content in the community. The strategic location of the library, in the heart of the village of Yupukari, just meters away from the village office and the primary school was a factor of attraction for villagers. Contrary to the Surama Ecolodge, located on the village outskirts, the Yupukari library was easily accessible by foot for anyone living near the centre of the village.

The inclusion of ICT use within educational activities provided a frame for learning about the technology. Using internet as a resource, the library volunteers were able to develop a range of educational programmes for school children. These programmes



included activities aimed at improving literacy, as well as activities aimed at learning basic ICT skills, such as how to use computers and how to perform internet searches:

*“The first time I went to Caiman House I did not know how to use a computer. I thought that when I would touch the button it would spring up! (laughs)” (I24).*

*“I used to go to school and come to the library and learn about computers. A volunteer taught me” (I22).*

*“When I became a librarian I didn’t know anything about computers. It was just there and then I came and I got stuck into using it. And then [Hidden name] was more involved then. I asked him to help me and he taught me windows media, windows movie maker and a lot of stuff” (I21).*

The educational programmes organised in the library proved very popular with the schoolchildren, thanks in large part to the individuals organising these activities. For instance, it was argued that the popularity of the library was the highest when it was directly managed by I20 herself, or by foreign volunteers:

*“When it was launched by [I20], she trained people on a high standard and was very tough on schedule and timing. Also, she had developed some educational programmes so the children who would go to the library would be busy learning, accompanied by adults (I25).*

#### **6.4.2 Access to ICT**

As in Surama, the capacity of the community to maintain access came across several challenges. These included equipment-related challenges, bandwidth and, more

recently, cost. Equipment failure was a challenge to access, although this was partly mitigated by the presence of a foreign volunteer turned permanent resident (I27), who was known in the community as the (self-taught) IT specialist:

*"[I27] can repair laptops. If he can fix it he will" (I23).*

In the library, I27 confirmed that the laptops had a relatively short lifespan. They rarely lasted more than three years and had to be replaced frequently:

*"The majority of breaks are because they are laptops and people want laptops on their laps. A lot of the time the problem used to be power cables because you would have ten kids all piled around one computer and the power cable would get bent, twisted and next thing you would see is that it is not charging the computer anymore. Also it is a dusty, humid environment so motherboards do go, pieces of hardware burn out. I can show you (I27).*

*"There is about 10 or 12 computers just stacked in a corner right now. We have a volunteer hopefully coming in June to help develop an educational programme for the computers but they will also be looking at what we have here and see which computers can be saved" (I27).*

Poor performance was also affecting the internet service. Just like in Surama, the service was plagued by the limited bandwidth available, which was not suitable to the needs of the public library. According to I27, this performance did not correspond to what Caiman House was paying for:

*"We are paying USD 450 per month to get what is tested to be about 30 ko/s download. We are getting about a Gig download per day and 300 Mb upload a*

*day... yeah... [On paper the ISP] have 400 kpbs, that's what they offer, but I have never seen that! There is no way to have them prove it. You can test it. Go to one of those speed website and it will never get anywhere close. It will top up at 40 kbps, maybe. But using torrent sites, it will not pass the 30 kbps. That's the max. I don't know what they think we think! We have never met what speed they say we are supposed to get" (I27).*

This problem was aggravated by the multiplication of devices in the community in recent years, including personal laptops, tablets and smartphones, which were used to access internet despite a stagnating bandwidth. As a consequence, the bandwidth was increasingly being divided up in smaller shares, and the service was getting slower for everyone:

*"I think the reason why it is slow is because the villagers have their own computers, their own phones etc. They would come here and use the internet because we don't have any password" (I25).*

Lastly, the Managing Board was faced with a more recent challenge: that of paying the internet subscription to the internet service provider (ISP) with the funds of Caiman House. Until 2015, the internet service contract had been under the name of I20, who had provided continuous financial support for several years after she had been expelled from Guyana. However, in 2015, during a change of ISP, it was decided that the Managing Board would take over the payment of internet. This left Caiman House under additional pressure to find income, and constituted a potential threat to access for the rest of the community:

*“Now internet is paid for by Caiman House and this weighs on the budget”*

*(Caiman House Board Meeting, Personal notes, May 21, 2015).*

### **6.4.3 Increased Literacy**

Several respondents indicated that the establishment of the library had coincided with an improvement in the information literacy in the community, leading to an improvement in the school results of pupils. These improvements were notably associated with the use of internet:

*“During my librarian days in the public library I noticed more exams being passed by the national grade 6 exams because we do extra classes based on their topics and we used the internet to find information. We had a lot of passes every year, like the number kept increasing” (I21).*

A direct consequence was that more children were eligible to attend secondary school. According to the founder of Caiman House, this number went up to 60 percent of the children, starting from close to zero prior to the establishment of the library (I20). Although I was not able to obtain quantitative evidence of this affirmation, other respondents tended to confirm that the library had a significant impact on literacy:

*“Basically, since 2005 and the setting up of Caiman House the children really improved themselves. We had more passes every year, more children going to St Ignacius and other secondary schools. We had more passes because the librarians were helping the children, using the computer, browsing and helping the children” (I24).*

In addition to increasing literacy, the intervention also significantly improved the ICT and communication capabilities of library users:

*“When I was young there wasn’t anything like this in the community [i.e. library, internet, guest house]. And now that has brought a big change, everybody knows what computers are” (I22).*

This contributed to the emergence of new communication patterns in the community, as was suggested by one of the librarians interviewed in 2014:

*“And you know it’s good to be on Facebook because sometimes someone needs help on something and he could tell me and pass on the message via email or with the chat. And I see that it is helpful for passing on messages and things like that. I also use Skype.” (I22).*

As a result, a few years after the launch of the intervention, the library had become a multi-purpose centre, where villagers would come and hang out, using social media, communicating with friends and relatives, watching movies and listening to music:

*“I would see villagers coming here to use Facebook, the internet or Gmail. Very few kids would come here and use the internet to do educational things” (I26)*

*“Since then [internet] has become a tool for communication firstly, people are using it to stay in touch with others that they have met and then access to resources such as music, news,... Some use it to build their projects. They are actually using it in the way it was conceived: you can use your books but you can use the internet to enhance your research” (I27).*

## 6.5 Effectiveness of Yupukari Intervention

### 6.5.1 Shifting Priorities

Unlike the Surama intervention, the Caiman House intervention had been designed, planned, and financed by people originating from outside the community: I20 and her husband, on the basis of the agreement they had signed with the Toshao of Yupukari. Similarly, the leadership of the couple on the decisions concerning the implementation of the intervention was undeniable, from the construction of the guesthouse and library, to the installation of satellite-based internet, to the organisation of afterschool programmes.

However, the sudden expulsion of the foreign family from Guyana caused a radical change in the administrative structure of Caiman House. With the help of a foreign volunteer – I27 - who had been present in the community since the launch of Caiman House, the new Board of the Guyana-registered *Rupununi Learners Inc.* took over the management from I20 and her husband. For several years, the new Managing Board sought to continue the work of I20 and build on her ideas (with the distant support of I20):

*“It initially began with a foreign family living here. So there was a fairly expected routine on how things were happening. But with their departure a lot of activities were just maintained or developed from that point. So the library programming was largely based on what [I20] had done – she is a library scientist. That was maintained or tried to be maintained” (I27).*

After this episode, the Managing Board kept on routinely recruiting foreign

volunteers, who had the expertise to design educational programmes, train librarians in ICT use, as well as to maintain and repair laptops. But, gradually, some activities started to gain importance over the educational mission of Caiman House. For instance, the role of the guesthouse grew and Caiman House started to affirm itself as an ecotourism destination:

*“The ecotourism developed out of the Board forming this NGO and the structure of that has been fairly static and it developed with the recognition of success of other communities. So questions like how to structure ecotourism, how to rotate staff, how to have equitable distribution of the revenues, how to avoid fairly simple conflicts – Don’t keep staff on so long that other people start becoming jealous etc.” (I27).*

This shift had implications for the role of ICT in Caiman House. Outside the library structure, internet was increasingly used as a communication and marketing tool to support the ecotourism ambitions of Caiman House, for instance to deal with the logistics of answering inquiries, organising transportation, liaising with tourists, researchers, and partners. More importantly, internet communication allowed the Guyana-registered *Rupununi Learners Inc.* to stay in regular contact with its sister organisation – the *Rupununi Learners Foundation*, set up by I20 in the USA after her expulsion. Given the relative geographical isolation of Yupukari, internet became a strategic resource, a *lifeline* for Caiman House (I20). It allowed the business to stay afloat by liaising with partners in other countries, including I20 who notably assisted in developing partnerships with North American schools and universities. Asked

what would happen if the internet service was stopped, one of Caiman House Managers clearly highlighted their dependency:

*“If we remove the internet, things don’t go good because we would lose contact, we would lose everything! We have the radio, yes, but that is not for clients. The internet is one of our strengths at Caiman House” (I26).*

*“She [I20] is supporting us by sending clients to Caiman House. We ask help from her when we need so she supports us” (I26).*

During my visits to Yupukari, I had the feeling that the educational mission of Caiman House and the library had become secondary to the *business* aspect of the intervention. Despite falling under the responsibility of the Managing Board, the Caiman House staff was rarely seen in the library, which was left under the limited oversight of young inexperienced librarians. The library itself was seriously run down, with few books left on the shelves and a leak in the roof that let the rain through, threatening the equipment.

I was told that the library frequently welcomed volunteers from abroad to train librarians, and organise educational programmes. However, both of my visits happened at a time where no volunteers were staying in the community. Other indicators tended to confirm this shift in priorities: Most of the time I was there, teenagers and young adults tended to use the premises for leisure and for accessing social media. This could occasionally cause awkward situations. I notably witnessed some adults watching the war movie ‘Apocalypse Now’ on one of the laptops of the library, surrounded by young children despite the presence of a librarian, just a few



meters away. This was particularly enlightening that, just a few days before, I had been told that there had been complaints about children being exposed to adult content:

*“Recently there has been an upswing in [access to] pornographic content [...] These adults had either brought content in the library to watch or accessed it online. That blew up for a while and teachers were not sending students. It sounded like somebody was bringing dvds and they were watching quietly in the corner, but the library is not a private place. They were concerned that small children were around them and that story got out. That hurts us as an organisation or a library trying to provide a service especially when the teachers are saying: ‘do not go there, there is nothing good about going to the library’” (I27).*

I was made aware of these tensions during my first visit in 2014, however a year later this issue had apparently not been addressed. During the 2015 Board meeting the question of reserving certain timeframes for adults only was raised in order to avoid exposing children to inappropriate content.

Another indicator was the change of attitude towards the access to Wi-Fi between my visits in 2014 and 2015. In 2014 the internet access was considered as a public good, as was confirmed by the Assistant Manager:

*“We don’t have password because, as [the Manager] tells me, it’s the village that owns it. So anybody in the village just comes here and uses the internet. Even the building here, we cannot lock it up. If we do, they would say that we are greedy*

*and we want to keep it to ourselves. So we leave it open and anybody from the village would come in and use the internet or come and do whatever they want to do. The library is locked up at night because of the equipment, but this main room is open” (126).*

In 2015, however, the Managing Board was discussing the possibility to restrict the Wi-Fi access to the villagers as a measure to address the diminishing performance of internet and its impact on Caiman House business.

### **6.5.2 Impact on Wellbeing in the Community**

#### ***Individual literacy and empowerment***

Training and practice with ICT in the library had increased the information literacy, ICT capability, communication capability and, albeit to a lesser extent, the content capability of many library users. A few years after the launch of the intervention, a first generation of ICT literate young adults had emerged, many of whom had attended the St. Ignatius secondary school in the border town of Lethem or the Annai secondary school. The individuals who had been assistant librarians during the library’s early days as well as other individuals who had been dedicated library users were now in their twenties and taking on more responsibilities in the community. Among them, some had been able to secure jobs as teachers, others had joined the staff of Caiman House; or had positions as Village Councillors. The Ministry of Amerindian Affairs also employed some of them as Community Support Officers. Two of the recently elected Toshaos were young men who had both been avid users of the library and were computer literate. In this regard, the intervention had contributed to

empower individuals in the community.

In addition, the intervention also had psychological implications for the inhabitants of Yupukari: a sense of pride for being part of one of the success stories in the North Rupununi, which had been made possible in part through the satellite-based internet intervention. It allowed Caiman House staff and library users alike to create and develop a virtual network, a dense web of relationships on which they relied to unfold their ambitions and implement projects:

*“internet [access] has made Yupukarians connected to the world, and that has both practical and psychological implications” (I20).*

### ***Political freedom***

Just as in Surama, internet was a source of information for the community, and helped increase political awareness in the village in a context of information scarcity. It provided the community with access to up-to-date information on what was taking place at the national level, including the debates about the on-going development programmes in which the Government was engaged. For instance, the failures of the OLPF and fibre optic cable were heavily commented online by newspapers, bloggers and independent journalists, but this information rarely reached remote communities, apart from those who had internet access.

However, this access to independent information about the action of the Government did not seem to increase the defiance of the population towards the PPP/C, at least not in a proportion that significantly shifted voting patterns. In a conversation I had with the recently elected Toshao of Yupukari (and former librarian) in the summer of

2015, I was informed that in the past few elections a majority of the community had been voting for the opposition parties APNU and AFC. However, during the 2015 national elections, a majority of people voted for maintaining the PPP/C in power with 119 votes for and 92 votes against. This suggests that the patronage system organised by the PPP/C, notably through the CSO programme (which concerned 7-8 families in Yupukari), probably had a bigger impact on voting patterns than having access to channels of communication that were not controlled by the Government.

### ***Socio-cultural impact***

Increased information literacy and communication capabilities had contributed to empowering individuals, but the community also faced new challenges. The fact that more children were sent to secondary school had created a new dynamic in families. Given the distance between the secondary schools and the village, a lot of children had to board and stay away from their families for months at a time. While they came back having furthered their education, they were also less inclined to engage in traditional farming activities. The general curriculum they had been taught in high school was not really adapted to local needs, which required vocational training, e.g. in agriculture and tourism. And when they had the right skills the conditions they were offered did not necessarily correspond to their aspirations, as was hinted by a Councillor:

*"[S]ome youth turn away from projects and I don't know why. Like for example we have trained carpenters and some of them turn away from the job. But we need them now, furniture is supposed to be made now. These trained carpenters are there but they don't want to do it, probably because they love their farming" (I23).*

The jobs the Councillor was referring to were unpaid, community self-help types of jobs. Perhaps farming was not the only reason these jobs were not attracting people. The notion of income was increasingly becoming the norm due, in part, to the influence of technologies and a westernisation of preferences. Young adults usually wanted to earn money instead of taking part to community self-help activities. The community was therefore under increased pressure to create new paid jobs in order to keep the youth in the village.

While the intervention had contributed to increase the capabilities of individuals, there were limited opportunities to transform these capabilities into achieved functionings in Yupukari, outside Caiman House. As a consequence, a lot of youngsters who had finished high school had to move to Georgetown, Brazil or to mining areas to try and earn an income. The migration of youth had been designated as one of the threats facing the community in the 2010 community development plan (Bina Hill Institute 2010). Five years later, the trend did not seem to have been reversed.

### ***Economic impact***

Thanks to its activities in research and tourism, Caiman House had become one of the main employers in the village. It provided a handful of permanent managerial positions, hired librarians, cooks, house cleaners and tour guides. Like in Surama, the community was also a base for academic research, creating local opportunities to learn and apply scientific research techniques and earn money. A rotation model similar to that of Surama has been adopted. The social enterprise was by far the largest income-earning activity in Yupukari, with a turnover in excess of US\$50,000 per year:

*“We are dealing with about 300 guests a year who are staying for one or two nights and who are paying 90 USD per night. We are probably getting about 200 USD per person so that’s the sort of annual revenue we are looking at. We now have moved into a couple of other programmes that double that. When we get student groups, we have a programme called GLASS that almost doubles our revenue. If we were to get the ideal which is 10 students, that would double our revenue” (127).*

But this economic development had come at the expense of other aspects of the Caiman House mission statement, notably its educational mission. Over time, the progressive loss of interest in the library, aggravated by the lack of investment, frequent changes in the library staff and long periods without volunteers had gradually lowered the quality of the educational programmes offered at the library. Speaking with some young adults who had known the early days of the library, I could feel a form of nostalgia for these days past:

*“When [I20 and her husband] were here things used to be much better. The librarians would be there teaching children, they would be going to schools to do primary nursery schools to teach the kids to read and bring kids over there and teach them etc.” (I26).*

The decrease in the quality of training and educational programmes was a concern for community members. Ten years after the launch of the library, it appeared to have lost its status as a structuring environment and distrust had broken out between the schoolteachers and the librarians:

*“Part of it is [...] a judgement of the level of education of the librarians because they are school leavers they are not secondary students for the most part. They are trying to support students younger than them with low education [...] I mean they have done a great job, but to get the respect they deserve they are not gonna get it from others that have gone further than them in education [...] I think that’s another part of it: they do not get recognised for the efforts they have made because they are not teachers, they have not been trained outside of the library” (I27).*

*“But right now, just the librarians are there and they are not going to the school anymore because there is a conflict with the teachers who don’t want the librarians to go in there any more... I don’t know for what reason” (I26).*

## 6.6 Conclusion

The installation of a satellite-based internet service in Yupukari had several impacts on wellbeing in the community. It contributed to the development of new information

and communication patterns in the community and helped Caiman House attract researchers, tourists and students and created jobs in the community. Crucially, it also improved literacy and increased the number of pupils that were able to attend secondary school. In that sense, the intervention contributed to the wellbeing of many individuals. At the collective level, however, the situation was more nuanced. Ten years after the launch of the intervention, the community appeared to hesitate between various models for the library internet access. One source of conflict concerned the social rules surrounding the use of the library premises, with on-going power struggles looming between the librarians, the Caiman House staff, teachers and the Village Council. Another aspect concerned the model of intervention, and the tensions that existed between, on one hand, the commitment of Caiman House to provide open access to ICT in the library and, on the other hand, the reality of an organisation trying to survive and thrive by keeping a balanced budget and growing its tourism and research activities. The case of Yupukari illustrates how socially embedded ICT is, and the responsibility that falls on stakeholders to determine the aims and rules surrounding ICT interventions in order to ensure that they have a positive impact on wellbeing.



## Chapter 7. A Researcher-Led ICT Intervention: Pantanî Blog

*“During the hike, our guide, an elder Makushi man, shared traditional tales with us, depicting every mountain, every river and every valley we crossed. It was like being walked through an old town, with its church, its streets and its main square. The places we saw were buzzing with memories and legends, evidencing the strength of the mutual relationship between Amerindian culture and their environment. Of course, this is a subtle relationship, one that does not immediately spring to the eye of the foreign observer. It is without material evidence, marks or scars, because it is not based on the presence of human settlements or the extraction of natural resources. Instead, it is deeply spiritual and embraces a Cosmo-centric worldview. What appears as thousands of hectares of wild savanna, forests and mountains is in fact the result of an inter-dependency, where human beings shape their environment and their environment shapes who they are” (de Ville et al. 2015).*

### 7.1 Sources of Data for the Pantanî Blog Intervention

In accordance with the general focus of my doctoral research, the researcher-led intervention aimed to design, implement and evaluate a context-sensitive ICT intervention for improving wellbeing in North Rupununi communities. While building on the observations and lessons from the three third-party led case studies, this stage of the research differed in several ways. During previous case studies (Chapters 4-6), my position was essentially that of an evaluator, embedded in the local scene but with

limited opportunities to influence processes or outcomes. In contrast, the Pantani Blog<sup>23</sup> intervention allowed me to take a more prominent role. Due to its experimental and researcher-led nature, I was no longer bound to the single role of evaluator, but I was also directly involved along with other participants in the design and implementation of the intervention. The adaptive principle outlined in the methodology chapter was used to respond purposefully to changes in the context of intervention. Several evaluations took place to capture change in viewpoints and actions resulting from experience (Table 12). This personal involvement in the process of intervention provided a unique opportunity to reflect on the design of the evaluation framework.

**Table 12 - Formal evaluations of Pantani Blog intervention**

Date	Type	Number of published stories	Location	Code
8 November 2014	Group discussion with the participants	18	Skype	E1
30 January 2015	Semi-structured interviews with 2 participants	27	Skype	E2
25 May 2015	Group discussion with the participants	37	Surama	E3
26 May 2015	Final evaluation with the community	37	Surama	CE

Four participants, excluding myself, were directly involved in the researcher-led intervention (Table 13). As the actual implementation of the intervention occurred after the end of my first period of fieldwork, and my return to the UK, the data collected outside the formal evaluations included mostly digital data, such as online

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<sup>23</sup> “Pantani – pronounced ‘pan-duh-nee’ – means “stories” in Makushi, the language of the Indigenous peoples of the North Rupununi, Guyana. It is also the name chosen for the researcher-led intervention.

metrics, email exchanges with participants, Facebook posts and messages, as well as Whatsapp messages. Personal observations and fieldwork notes were also kept throughout the intervention.

**Table 13 - List of roles in the researcher-led intervention**

Role(s)	Gender	Age	Code
Main Researcher (myself)	Male	33	MR
Blogger 1/Local Coordinator	Male	32	B1
Blogger 2	Female	22	B2
Blogger 3	Male	26	B3
Blogger 4	Female	27	B4

## 7.2 Context of Pantani Blog Intervention

Five months of fieldwork in Guyana, informed by the collection of data on the OLPF, as well as the Surama and Yupukari interventions provided me with a good overview of some of the interrelationships at play between Indigenous communities, infrastructure and governmental institutions, and the political, economic, social and cultural characteristics of the North Rupununi context. It also gave me some valuable insights on the distribution and usage of ICT in the region. Whereas computers, tablets and mobile phones were increasingly creeping into the lives of Amerindian communities, evidence showed that these technologies were essentially used as communication outlets, for accessing information as well as for leisure. However, the *content* capabilities of users, that is, their ability to produce local content and share it with others, were very limited outside the framework of social media. This finding triggered a reflection on the interactions between digital content production and

wellbeing, which was brought up in informal discussions with some individuals in the North Rupununi. Their feedback helped trace the contours of a researcher-led intervention (Box 10).

#### **Box 10 – Background information on the researcher-led intervention**

The idea of a researcher-led intervention dates back to December 2013, when I successfully bid for a grant at the Open University, on using accessible ICT for environmental management. The original proposal, coined *Handhelds for Sustainability*, was to dedicate part of my fieldwork in 2014 to actively engage local Indigenous participants in using digital handheld devices. It aimed to explore how these technologies could be combined with traditional Indigenous ecological knowledge to respond to situations affecting Indigenous communities. The main objective of the intervention was to organise training for improving participants' command of ICT, and to build capacity for using handheld devices to capture and share stories depicting environmental challenges and associated community-owned solutions (Appendix 4).

Due to the difficulty of sourcing ICT equipment in Guyana, I decided to purchase four digital tablets in the UK, ahead of fieldwork in January 2014. In selecting the digital tablets, questions of design, access, training, maintenance and sustainability (Foth 2006) came into consideration. My decision was notably based on conversations I had with former colleagues, and on my personal experience during a previous visit to the North Rupununi, in 2012, as part of Project COBRA. Unlike most laptops available on the market, tablets were more adapted to the local context. Light, cheap and versatile, these devices are known for their user-friendliness as well as the length of their battery life. After doing some market research, it was found that the *Samsung Galaxy 8* digital tablets presented the best compromise in terms of price, accessories and software accessibility. The hardware was neat and sturdy, but built for urban use, with a combination of aluminium, plastic and glass, so each unit was equipped with an additional all-weather protective case to resist the heat, humidity and dust of the North Rupununi. In addition, four 32GB memory cards were purchased and added to the memory slot of each tablet, in order to address the limitations of the 32GB internal memory. In total, the equipment costs added up to less than GBP 1,250.00, that is, 27% of the budget allocated for the intervention (Appendix 5). Each tablet was tested and set up in the UK, and several applications were uploaded, such as photo and video editing software, social

media apps (Facebook, Instagram, Tumblr, Twitter), as well as Skype for communication.

### ***Selecting participants***

An important constraint was that, apart from the launch meeting (Appendix 8), the actual implementation of the intervention occurred after the end of my fieldwork and my return to the UK. The geographical distance that separated me from the participants, and the fact that I would only be able to assist them remotely, and not through regular face-to-face meetings reinforced the need to have a relationship based on trust, where everyone involved in the intervention would be able to communicate openly (Park 1993). Other aspects that had to be considered included selecting participants able to communicate and write in English, who possessed a basic command of ICT and with an outgoing personality, as the project would potentially require interviewing local people. Each candidate was therefore personally considered in terms of the following criteria: (i) Possession of basic ICT capabilities (including internet use); (ii) English writing skills; (iii) Outgoing personality / ability to speak in public; (iv) Trustworthiness; (v) Access to internet. In addition, a stipend payment system had to be set up to reward them for taking part to the intervention.

A male in his early thirties – *Blogger 1* - and a female in her early twenties – *Blogger 2* - were identified early on. I knew them on a personal basis since we were colleagues on Project COBRA. Our relationship was reinforced during my stay in the Rupununi as I saw them almost daily, at the office rented by Project COBRA in Bina Hill. We undertook several field trips together. They both had a very good command of ICT, and previous experience in research methods and techniques, such as in participatory video (Mistry & Berardi 2012; Mistry 2013), as well as in organising workshops and interviews. Lastly, they also had access to internet through their involvement in the NRDDDB. Given his seniority and experience in project management, I asked *Blogger 1* to also take the role of *Local Coordinator*, which he accepted. He appeared as a strong reference person for the local team and a helpful sparring partner for me – the *Main Researcher* – to discuss ideas about the design and implementation of the intervention. Two additional participants from the community of Surama joined the project... after interviewing them as part of my case study on the Surama Ecolodge internet intervention. *Blogger 3* was a young tour guide in his mid-twenties, passionate about nature, whose command of English was above average. He had a degree in Informatics and had lived part of his life in Georgetown before moving back to Surama with his family. He was also easy going and outspoken. The last participant, *Blogger 4*, was a female in her late twenties, who

was employed at the Surama Ecolodge. Outside her work, she was also caring for her family.

One of the underlying motivations of the researcher-led intervention was to explore whether the experience gained from the practical application of the evaluation framework in the OLPF, Surama and Yupukari case studies could inform a better way of planning, implementing and evaluating ICT interventions for Indigenous wellbeing. It was built on an idea inspired by Sen's capability approach, that technology could enhance wellbeing, provided that its application served the needs of its beneficiaries. Despite being a researcher-led intervention, it drew on Participatory Action Research principles to design a purposeful intervention where power and control would be equally shared between the main researcher and the participants.

### **7.3 Pantani Blog Intervention: A System of ICT for the Preservation of Indigenous Traditional Culture**

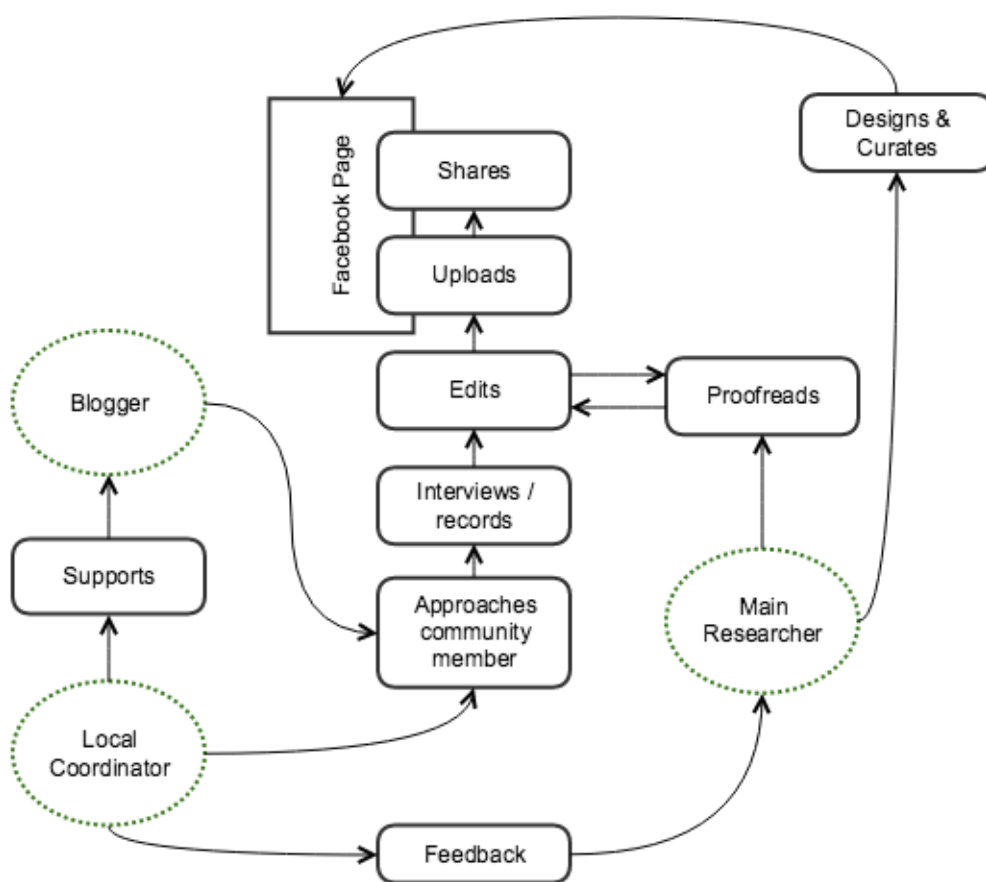
The aim of the intervention was to bridge ICT use and the traditional practice of storytelling by creating and curating an online blog, on which the participants could upload and share local stories, as well as to develop their ICT and content capabilities. The tablets I had purchased in the UK would be used by the four participants as multimedia tools to create, collect, edit and publish stories in a variety of formats, including video, photography, audio and text. The rich picture presented in Figure 18 illustrates my own perspective on the researcher-led intervention (April 2015). The intervention unfolds around the four participants in the centre of the picture. Equipped with a tablet each, their role is to meet fellow community members, listen and record their stories. The tablets enable them to record these interviews in various formats, including text, audio and video. This community engagement



I contribute my editing and ICT skills to share the stories online. The accent is set on cooperation between the parties involved, while the underlying legitimacy is found in the expression and promotion of subaltern voices.

It should be noted, however, that the rich picture was drawn in April 2015, that is, after the end of the researcher-led intervention. A similar exercise would have produced a very different picture, had it been done a year before, at the launch of the intervention. A more accurate description of the original intention can be found in Figure 19. According to this model, designed in June 2014, the Bloggers work with the support of a Local Coordinator to approach members of their communities, record stories and edit them. As Main Researcher, my role consists in providing editing support, e.g. proofreading, curating the website, as well as receiving feedback from the Local Coordinator. However, the publishing (uploading and sharing) is done by the participants themselves. The difference between the model in Figure 19 and the rich picture in Figure 18 is exemplary of some of the adaptive actions that were taken throughout the course of the intervention. These actions are looked at in detail in sections 7.4 and 7.5.





**Figure 19 - A conceptual model of the Pantani Blog intervention (June 2014)**

As explained in section 7.2, the concept of an online blog for the publication and sharing of local content emerged from the combination of various considerations, some of which were entirely shared with the participants and the wider communities, while others were more personal to me (or to the other participants). The list of simple systems below represents some of the stakeholders' perspectives that either were, or might have been used to describe the intervention:

*A system to collect and publish Indigenous traditional stories online by means of using digital tablets in order to safeguard these stories for future generations.*

*A system to employ participants for collecting data in Indigenous communities, by way of paying them a stipend and giving them digital tablets, in order to pursue personal ambitions (a PhD).*

*A system to collect Indigenous traditional knowledge, by means of interviews, in order to sell them for profit.*

*A system to develop the content capabilities of four Indigenous participants, by means of training them in digital storytelling, in order to empower them to apply ICT for their own needs.*

*A system to earn some additional income and a digital tablet, by means of taking part to a researcher-led intervention, in order to pursue other projects.*

...

Whereas some of these perspectives might depict the intervention as instrumental to the pursuit of strictly personal goals, it was far from being the case. All participants had a genuine interest in enhancing the wellbeing of their community, and were willing to learn about the potential application of ICT to the preservation of culture. The following simple system reflects the original – and *ideal* – intention behind the researcher-led intervention (Box 11).

#### Box 11 - Simple system describing the Pantani Blog intervention (ideal)

A system to...	Purposefully build participants' content capabilities and develop an online space for hosting and sharing local content
By way of...	Using digital tablets for creating, collecting, editing and publishing Makushi traditional stories, and providing editing support and training as required by the participants
In order to...	Enhance participants' informational capabilities and showcase an approach for enhancing Indigenous wellbeing through ICT use

Expanding on this definition using the CATWOE mnemonic:

- Customer: participants in the intervention, North Rupununi communities and all of those who are interested in learning about traditional Makushi culture.
- Actors: participants in the intervention, myself included.
- Transformation process: the recording of traditional Amerindian stories and their publication online.
- Worldview: information centric. Cultural preservation as wellbeing.
- Owners: the Open University and myself.
- Environment: challenges related to distance, internet communication (bandwidth), energy and time.

## 7.4 Efficacy and Efficiency of Researcher-led Intervention

### 7.4.1 Initial Adjustments

#### *Adapting to local realities*

The first few weeks of implementation tested the design of the intervention and revealed time, access and communication-related challenges, which limited the capacity of participants to reach the target of one story per week. The amount of work needed to take part in the project had been estimated to one day per week, but for some participants, it proved challenging to adapt their schedules as they were combining their involvement in Pantani Blog with other personal and professional commitments.

*“Challenges are mostly time and the assignments of time allocated for everything in my daily life. Work and the time to write stories has been challenging, however I have overcome by making sacrifices, by making extra time for the story writing after [...] work. But it's usually very tiring” (B1).*

Internet speed and bandwidth limitations affected the rate of publication of stories, in particular in Surama, where internet was only accessible 5 hours a day. The limited bandwidth affected the transfer of large files and made it difficult to upload video, photo and audio files online. As soon as a file reached a few hundred kilobytes, uploading it became really complicated.

*“The challenge of not accessing a good internet is always a problem. But I make efforts to access the internet even if it calls for later hours in the nights” (B1).*

As a result, only about a quarter of the stories originally planned had been produced when the first of four evaluations was made, in November 2014. As response to these constraints, we chose to adapt the rate of production of stories, and to extend the duration of the intervention. Online discussions held in August 2014 led to an agreement on the reduction of the publication rate to the more realistic objective of one story per person per month and to compensate this slower rate of publication by extending the intervention's duration beyond the original deadline of November 2014, until May 2015. This decision was formalised in the Amendment to the Original Agreement, which was signed during the November 2014 evaluation (Appendix 7).

### ***Learning to Communicate***

Issues of ICT access also made it challenging to establish a reliable communication pattern between the participants and myself. This problem was aggravated by the limited mobile phone signal in Surama, which prevented me from using SMS or other text-messaging software with Bloggers 3 and 4. Despite sending numerous emails, I would sometimes not hear from participants for weeks in a row. They would suddenly reappear with a new story as I was starting to question their commitment:

*"Hi [name], man I still haven't received your first post... Are you working on a new one at the moment? I know you are busy but you have to communicate and tell me if you are too busy for this project, I would understand. But I can't work with no communication. Please let me know asap" (Personal email, 17 July 2014).*

It took me a couple of weeks to identify, learn and adapt to each participant's preferred channels of communication. It involved using multiple platforms with each participant, which included Facebook Messenger, Whatsapp, Skype, as well as email and the telephone. In line with what the third party-led case studies had shown, the Pantanî Blog intervention confirmed that social media were the preferred channels of communication of many users in the North Rupununi. As one respondent put it:

*"[W]hen I send a mail I don't know when the person will see it. So the thing is to go on Facebook [to let that person know that an email was sent] and you get the person to go back on his mail" (I17).*

The experience I had gained from the other case studies allowed me to quickly adapt my communication to take local realities into account. After some time, online communication also became more natural and straightforward for the participants, due to their increased confidence in using the digital devices. Evidence suggested that all participants were using their tablets to communicate, work and play outside the intervention's framework. Interviewed on their usage habits, three out of four participants explained using them on a daily basis, in particular its email service applications and social media, including Facebook, Google and Skype. Most participants seemed to have gained a fairly good understanding of how to download and install new apps. For instance, *Blogger 3* explained that he was using the device for drawing house plans and for designing. *Blogger 4* said that she used it "for almost everything", and *Blogger 2*:

*"I use the tablet mostly for communication, [for] Pantani Blog, for recording, learning. I have [down]loaded some kids learning app and I sometimes use it for teaching too. And yes for leisure, which is movies" (B2).*

#### **7.4.2 Story Production Process**

Although the concept behind Pantani Blog succeeded in stimulating an enthusiastic participation of the bloggers and a feeling of ownership, the intervention had mixed results on other accounts. The improvement of the technical skills of participants was affected by limiting *environmental* conditions, which prevented them from achieving certain aspects of the intervention. Limitations in internet access and speed really affected the distribution of roles, and eventually increased my role as editor and publisher of the stories. The preference for transcripts over sound or video files (due to limited bandwidth), combined with the fact that all stories had to be uploaded by myself created a personal dilemma about the limits of my intervention in the storytelling style and content. Indeed, some transcriptions were characterised by relatively poor English grammar and spelling. These stories sometimes required more or less extensive editing in order to make them *readable*, that is, according to my own standards (Box 12).

### Box 12 - Initial editing process

Extract, "How poisonous plants got their poison", published on 12 December 2014, UNEDITED VERSION	Extract, "How poisonous plants got their poison", published on 12 December 2014, EDITED VERSION
"Living in a small community called surama, I enjoy listening to my mother telling stories. During that time, we had no television to look at, the only thing to do was sit and paid attention to the old people tells different type of stories during the year. My grandma will always be nearby to correct her if she is missing out anything or main clue. This is one that touches me very much."	"Living in a small community called Surama, I love listening to my mother's stories. When I was very young, we had no television to watch. The only thing to do was to sit down and pay attention to the elder telling stories. And this is how stories were passed on from generation to generation. I remember my grandma sitting there with us and stepping in to correct or comment if my mother was missing out elements of the story... This one in particular touches me very much."

We tried to set up a two way editing process, where comments on the first draft would be emailed back to the author so that she/he would be able to make final edits. These comments focused on grammar and stylistic issues and included ideas on how to improve their storytelling in writing. In practice, however, the corrections were mostly sent for information only:

*"Hi [name], I published the story! I was hoping you would post it yourself but it might be easier if I do it. That's how projects work in the beginning: we make mistakes and learn from them on how to make it more efficient! I have done some more editing to the text. I hope you don't mind and that I did not change the meaning of any sentence, but if I did, let me know and I'll edit it" (Personal*



*email to one of the bloggers, 30 July 2014).*

Further into the intervention, as more stories were shared and participants grew more confident in their writing style, the amount of editing was progressively reduced to the strict minimum. It also resulted from my own experience gain and the feedback I received, notably through social networks. I became more careful not to modify the sequence of words as much as I had done in the intervention's early days, in order to retain the originality of the stories (Box 13).

#### **Box 13 - Revised editing process**

Extract, "Ma and Pa's Home", published on 17 June 2015, UNEDITED VERSION	Extract, "Ma and Pa's Home", published on 17 June 2015, EDITED VERSION
"Now children got frustrated looking after cubs and could not stand the living with flesh eaters. The children noticed the hunting hours were increased as the babies got bigger and bigger. The planned a morning hours to escape. So they waited for a new day to come. Once more the children ate dinner with them and they were all prepared for the morning escape. They all slept until the hungry hunters woke them up to babysit"	"The children grew frustrated at looking after the cubs and could not stand living with flesh eaters. They noticed that the hunting hours were increasing as the cubs got bigger and bigger, so they planned an escape in the morning hours. One last time, the children ate dinner with the tigers, after having prepared for their morning escape. They all slept until the hungry hunters woke them up to babysit"

Changes also affected the publication platform and format. I had originally suggested publishing the stories on a Facebook page, as it was easy to set up and all participants were already familiar with the social network. In addition, it was assumed that Facebook would be the best place to engage and interact with an Amerindian

audience, which included a lot of seasoned Facebook users. However, the limitations of the social network quickly appeared as questions of transparency, flexibility and design emerged after the launch of the intervention. These questions justified the need to develop a tailor-made blog to host the stories alongside the Facebook page.

As a free and open source content management system (CMS), *Wordpress* appeared to offer such a space. In addition, being a platform specialised in blogging, Wordpress offered a lot of flexibility in terms of breaking down long stories into smaller sections, adding titles and pictures in single posts. After introducing some intellectual property principles to the participants, some of whom were already familiar with the concept, they agreed that it would be a good idea to publish all stories under a Creative Commons licence (CC BY-NC-ND 3.0). According to the terms of this licence, the intellectual property of the stories fell in the public domain and could therefore be used by anyone as long as the authors' names were clearly mentioned. In addition, it also prohibited any commercial use as well as any derivative work based on the original story. This licensing scheme was clearly displayed on the Pantani Blog website, under the 'About' page, as well as in the bottom banner of every single page, with a link to the Creative Commons website. As the new Wordpress website was unrolled, in August 2014, the role of Facebook evolved into that of a sharing platform, which was used essentially to share posts to specific audiences and groups.

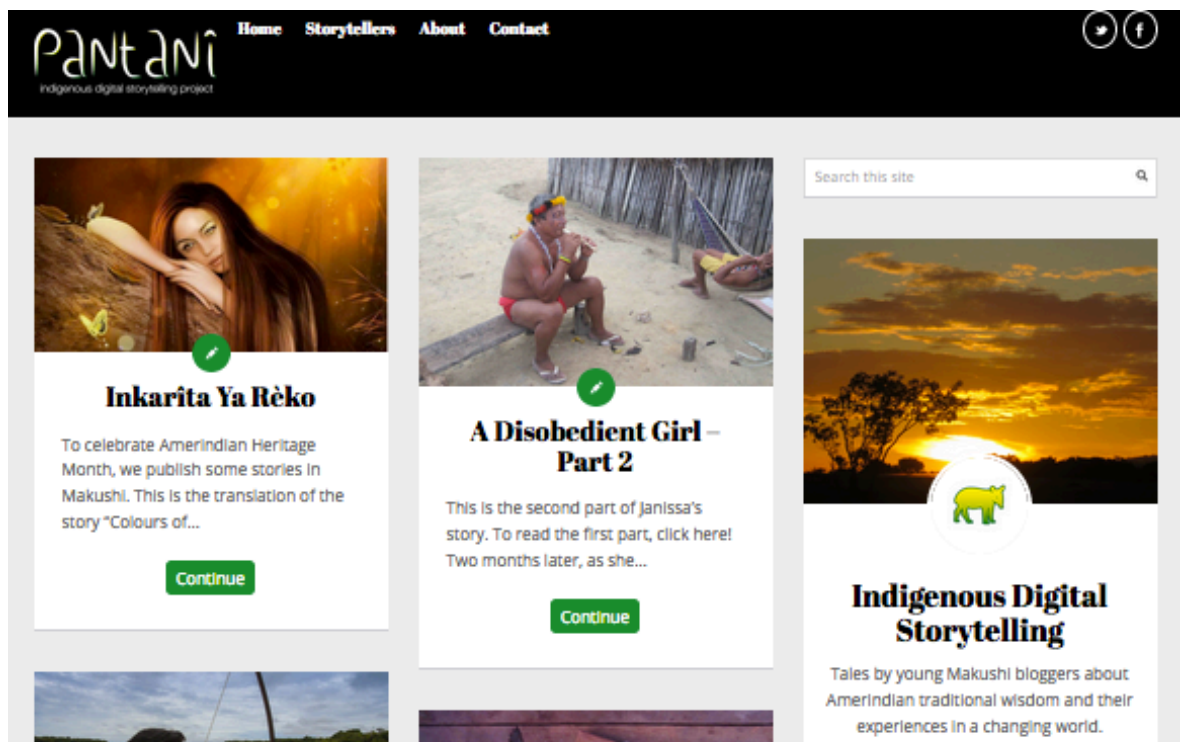
### **7.4.3 Online Reach**

By the end of May 2015, i.e. exactly one year after the intervention's launch, 33 traditional Amerindian stories had been published. As explained earlier, the stories were published on two different platforms. One was a Facebook page, which had been

created at the launch of the intervention, in June 2014, while the other was the Pantani Blog website itself (Figure 20). The stories were disseminated in several Guyanese Facebook Groups focused on Indigenous identity, culture, environmental conservation and development, such as *Amerindian*, *Guyanese Amerindians*, *Guyanese Amerindian Cultural Heritage*, *North Rupununi District Development Board*, as well as the *Project COBRA* page:

*“Really a nice page [it] reminds me of my great great grandfather who once told me this stories of Inshkiran and anieken” (Facebook comment, 26 November 2014).*

Data retrieved from Google Analytics about the Wordpress website frequentation showed that between June 2014 and the end of May 2015, there were 4207 visits, for a total of 6,858 page views and an average of 2’07” spent on the website. The statistics also showed an exponential growth in the amount of visits, as during the period June to December 2015, which saw the publication of 8 additional stories, the total amount of visits exactly doubled, reaching 8,414 sessions. This represented an average of 443 visits per month since the launch of the intervention, with a peak of 990 sessions reached in July 2015.



**Figure 20 - A screenshot of the Pantani Blog website (September 2016)**

Looking more into the details, it appeared that out of the 8,414 sessions, there were 6,442 new visitors, whilst 1,972 were returning visitors. The bounce rate, which indicates the percentage of visitors who left the website after visiting only one page, corresponded to 85.69% for new visitors, and 71.04% for returning visitors. In other words, only about one quarter of visitors viewed more than one page before leaving the website. The difference of average session length between new and returning visitors showed a significant discrepancy as new visitors stayed on average 43 seconds on the website whilst returning visitors 4'04". These numbers suggest that this core group of returning visitors constituted the website's actual community of readers, and that they were much more likely to read an entire story and move on to the next one than new visitors.

The analysis of Google Analytics data also provided information about the provenance of users. It showed for instance that 26.50% of all visitors were based in the USA, which is known to have a large community of Guyanese expatriates, and to be one of the main providers of tourists to the Rupununi. In contrast, only about 9.77% of visitors were based in Guyana. But the report also shows 11.47% of anonymous users, meaning that both these groups could be wider than what they appear. Other users included people from the UK, Brazil, China, Canada, Japan and Germany. Given the blog's object, language and rather specific scope, an important caveat in these statistics lies with the existence of a large group of Russian users (19.30%) based for the most part in the city of Samara. Several online blogs have mentioned experiencing similar occurrences, suggesting that Samara might be a geographical location from where bot traffic<sup>24</sup> is generated.

The difficulty to evaluate the proportion of human beings versus that of bots behind the website traffic indicates that all these numbers need to be handled with care. However, taken broadly the data suggest that the diffusion of stories on the Pantanî Blog website mostly appear to have attracted a group of returning visitors based outside Guyana, in developed economies where internet penetration is more widespread. It also showed that that the online publication of Pantanî Blog contributed more to the dissemination of Amerindian culture at the international level, than at the regional or local levels. In comparison, few people in North Rupununi communities were aware of the Pantanî Blog intervention through the website, as internet access was still limited in the region.

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<sup>24</sup> An internet bot is a software application that runs automated tasks (scripts) on internet (source: Wikipedia)

#### **7.4.4 Capability Gains**

In monitoring the impact of the intervention on individual capabilities, the first priority was to gather evidence for evaluating how the intervention affected the ICT and content capabilities of each participant, that is, their ability to use ICT tools and their ability to produce local content and share it with others. Although important, the ICT aspect of the intervention was by no means the only one, as the participants had to mobilise a wide array of different skills, including social, writing and storytelling skills to perform throughout the intervention.

Through observations and evaluations it was found that the intervention had been partially successful in enhancing the content capabilities of the participants. For instance, between the beginning and the end of the intervention there was a net improvement in the quality of story transcriptions. Repeated exercises of transcribing or writing down stories assorted with feedback had pushed the participants to explore and improve their writing and storytelling skills, as well as to feel more confident about their ability to write:

*"I have learnt that there many ways you can express certain things. As English is not my first language, I have gradually improved on the writing and the use of English. I hope to go with that strain and be a better writer in my life. I have also learnt knowledge other team members harbour and learning similar stories from each other has made me learn more which I will share with others [...] I am particularly proud that I can write the stories myself about real life experiences in a way that it doesn't connect these real life experiences directly to me or the people who are/were involved" (B1).*

*"I have [made a] great amount of improvement in writing stories" (B2).*

The online publication aspect of the intervention stimulated the interest of the participants in publishing content on social media, about their personal and professional activities. A few months into the intervention, two of the participants sought advice from me for creating or administering their own Facebook page or groups. One of the participants began to administer a cultural group whilst the other, a tour guide, launched his own business page on the social network, where he regularly posted pictures of his tours and comments on the wildlife he encountered.

The intervention had other effects as well, notably on the social skills of participants. At first, the stories were primarily gathered in their family circle. But as they were exhausting the stories of their parents and grand parents, the participants were increasingly drawn to approach other members of their community. This required them, in some instances, to develop a capacity for empathy and listening, but also the development of convincing arguments to encourage wider people to take part to the intervention:

*"I have also learned to talk and reach out to people who I have never talked to before [...] Recently, I was telling a young woman about Pantani and she [replied] that writing poems is much better than to write old stories. But I find it interesting because these kind of people need to realize the importance of why we should talk to elders or adults or children to gather stories or their traditional knowledge before they would go away with them" (B2).*

Each encounter was an opportunity for the participants to introduce Pantanô Blog's aims and objectives, answer questions and fears, and to establish a dialogue. They recognised that interviewing someone was not necessarily straightforward. The team suggested that, in addition to getting consent, it was important to make the people feel at ease, and to break the ice prior to launching the recorder. The intervention also allowed the participants to improve their public presentation skills, and participate in a week-long training programme on storytelling *This is Ours* organised by an organisation called Education and Environment, in March 2015. Some of them presented the project in public forums or at festivals and all took an active role in the Community Evaluation Meeting on 27 May 2015. For two of the participants this was a new experience.

## **7.5 Effectiveness of Researcher-Led Intervention**

### ***7.5.1 Participation and Control***

Building on PAR principles and on the observations of the national and the two local case studies, the researcher-led intervention sought to leave as much room as possible to the participants to let them take initiatives for purposefully changing the course of the intervention. In addition, it aimed to involve the bloggers in all decisions and actions, from the planning to the implementation, to the evaluation of results and their analysis. In practice, each stage of the intervention encountered challenges in the application of these principles.

On the day of the launch of the intervention, on 30 May 2014, a written agreement containing the intervention's Terms Of Reference (TOR) (Appendix 6) was proposed



to the participants. The document outlined the objectives of the intervention as well as the respective responsibilities of each participant and the benefits of taking part in the intervention. The participants were encouraged to write and/or record stories on their own, as well as to engage with their community to source stories. My role, as specified in the TOR, was to provide overall support and to develop the webpage, as well as to assist in the dissemination of the stories. The topics proposed in the stories were kept general on purpose, leaving room for specifications later in the intervention process. A mechanism was agreed on to compensate the participants for their time and efforts and a stipend corresponding to the average daily wage was foreseen for each story published.

The document was kept short - two pages - to give each participant a chance to read it carefully, ask questions and/or suggest adaptations in the text. None of them immediately used this opportunity as they found the document acceptable in its proposed version. However, they started to imprint their own priorities soon after the launch of the intervention, steering the focus of the story collection towards the safeguarding and promotion of Amerindian traditional culture, an objective that was mentioned on the TOR, among several others:

*“The object of these stories shall focus around land uses, land rights, wildlife, sustainability or natural resources management, language and culture, traditional beliefs. News and events can also be covered” (Extract, Indigenous Digital Storytelling Project Agreement, p.1).*

With a personal preference for politics and social and economic development, the choice of the bloggers to focus almost exclusively on culture had been somewhat not

anticipated on my part. For the bloggers, however, the process of story collection was a way to emotionally reconnect to childhood memories, exchange with family and other community members, and explore their traditional values. Many stories appeared to have a personal importance for their authors:

*"Well I just go out to my family and ask if they know any traditional stories and I listen. Sometimes I record and from there I pick the one that really reflects our tradition" (B3).*

*"[My favourite story is] the Seven stars, due to my Granny being the one to tell [it to me in] babyhood" (B4).*

*"For me that would be [The bushmasters and the hunters], because the story itself shows how sometimes the things we do don't just harm us but everyone around, and with togetherness we can defeat anything and also with [it] believe anything is possible" (B3).*

*"I am proud of the 'Into the wild' story as it reflect to a real life situation in an Amerindian community and [even] more because I have had similar experience growing at home in a similar environment" (B1).*

*"The story I like and would say that I really believe in is the Belief kills, belief cures, because it is reality and I believe that it has some impacts in [my] present life. When I was becoming a teenager, I clearly recalled my mom telling me that part of the story "when you turn young lady, cover your head with white cloth before sun give you a hat and you will suffer with headache" and unfortunately, I reached the teenage cycle at distance from my mom and I never covered my head*

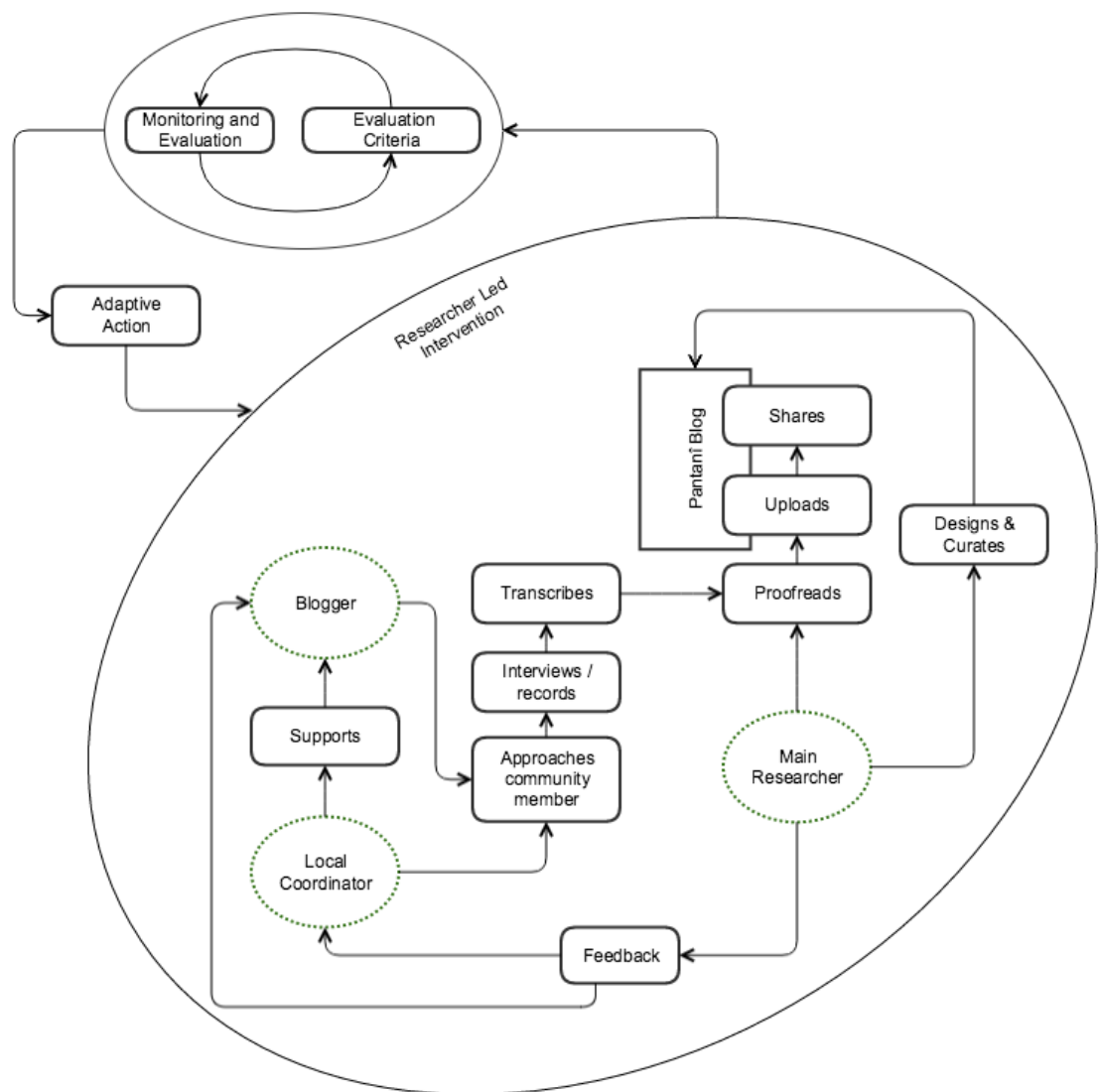
*because I was ashamed of doing it. So I believe that in my present life, I suffer with terrible headache.” (B2).*

The implementation of the intervention did not go exactly according to the original plan, due to the limiting *environmental* conditions outlined in the system of interest, in particular the issues of access and bandwidth. The process of story production had to be adapted accordingly, and so were the measures to ensure that I was not taking too much control over the intervention. The model shown in Figure 21 reflects the changes that were made to the original conceptual model presented in Figure 19.

While keeping a similar structure as the original model in the early stages of intervention (including community interaction, interviewing and transcription), Figure 21 shows that the later stages, which include proofreading, uploading and sharing rest on the Main Researcher (myself), rather than on the other participants with my support. The revised model also includes an explicit reference to monitoring and evaluation, as well as to adaptive action, which were taken together collectively with the participants.

The distribution of power was another issue that underpinned much of the implementation phase. Indeed, in spite of my efforts I ended up cumulating several stakeholding roles, including those of decision-maker and expert, and was therefore vested with a certain authority. For instance, I frequently encouraged the participants to react or ask for changes in the posts, even after I had published them. I was conscious that this process was far from seamless. It was unlikely that participants would argue much against my edits on issues of grammar and storyline construction. Furthermore, I was the *de facto* link between the participants' stories and the

readership, which further reinforced my position in the project as I was not only its instigator and funder, but also its gatekeeper. In short, power was concentrated into my own hands. I therefore had to be very careful not to abuse this power, and to transfer it on every occasion that was given to me, e.g. constantly reminding the participants to take their own decisions and initiatives.



**Figure 21 - Revised conceptual model of the Pantani Blog intervention**

Despite these challenges, the participatory approach also produced some interesting initiatives from the bloggers, such as their responses to a demand for increasing the

local reach, as well as the impact of the Pantani Blog intervention. They prepared a proposal to broadcast the stories on the local radio, and organised a storytelling competition in the Annai Secondary School, in which more than 40 students took part. The first initiative of the participants was to record themselves reading the stories and to produce a short programme called *Pantani on air* for broadcasting on the North Rupununi community radio: Radio Paiwomak. We discussed the outlines of their plan during the November 2014 evaluation meeting. It consisted in trying to increase the local dissemination of the stories, by reaching out to non-internet users, as well as by involving local people directly in the process of story production:

*“Pantani Blog should be publicised on the radio, where we ask and invite interested people to share traditional stories” (E1).*

Plans were made to start recording and broadcasting at the beginning of December 2014 but the initiative ran into organisational challenges and was delayed until February 2015, when several stories were broadcasted, generating positive feedback from the audience.

*“The major challenge was to get to write the story and deliver it on time. The recording of the stories to be broadcasted on the radio, the recording equipment and the editing and the time constraints delayed the delivery” (E3).*

Another participant-led initiative was the organisation of a writing competition in the Annai secondary school. The participants called this initiative the *Junior Pantani Story-writing Competition*. Discussions were initiated with some schoolteachers to organise the storytelling competition in the first half of 2015 and the participants

began to design the competition rules (length, duration, prizes). The idea was met with enthusiasm from the teachers of the Annai Secondary School. It was even suggested that they would integrate these stories in the official teaching programme and local examination procedure. In May 2015, one class had participated and produced over 40 stories.

Of all the intervention stages, evaluation was perhaps the one where participation was the most challenging, partly because of the distance separating the local participants and myself and the fact that most communication was done through internet, but also because there appeared to be less interest from the participants in this aspect of the intervention. Apart from the formal evaluation meetings, I spent a lot of efforts in sharing information, systematically providing opportunities to contribute input to reports and papers and, in general, sharing credits and intellectual property on publications, including any academic output deriving from the intervention. This can be seen, for instance, in a paper published in December 2015 (de Ville et al. 2015), and which was co-authored by all the participants and myself.

### ***7.5.2 Impact on Wellbeing***

One of the most important impacts of the intervention for the participants was psychological: they felt they were being useful to their community. Their explanations suggested that they felt invested with a mission akin to a public service in an era of profound change driven, in part, by the proliferation of ICT in their communities. Their mission contributed to mobilising ICT to demonstrate how it could be used to safeguard their collective identity:

*“Our parents did not get education, we got a basic one, but our children are getting smarter than we were. The whole system is going to change but it is really about finding the balance in this change” (B1).*

*“Thanks to [the intervention], people can have a trail of where they come from and remember who they are [...] People have to choose, and with Pantaniê we are giving them this choice” (B3).*

The use of ICT was seen as a way to bridge across generations and to unite them behind a common purpose: the preservation of their identity. This sentiment gave the participants a sense of pride:

*“I feel proud that I have joined this Pantaniê storywriting project as I had always wanted to record the knowledge that the elders hold and especially the very elderly ones [...] I am proud also to be engaging more people with information of importance, especially the current generations who are increasingly using technology, i.e. the Facebook application” (B1).*

This sense of pride of participants was not limited to the contribution of the intervention to intra-community relationships, thanks to the dialogue they had established between elders and youngsters. It was notably pointed out that other interventions had already successfully collected traditional stories in a similar way in the past. However, the difference between these initiatives and Pantaniê Blog lay in the use of ICT to disseminate these stories beyond North Rupununi communities, to the rest of the world. Not only were they bridging elders and youngsters, now they were

also linking Amerindian culture with other cultures and, importantly, they felt they were more in control:

*"It is something I wanted to get into for a long time, getting the stories told to me to the world" (B4).*

*"[I]n the past people have come here and recorded Amerindian ways and we would not see it. Nowadays we produce this information ourselves!" (B1).*

These views were not necessarily shared by all community members. Legitimate questions about the destination of the stories highlighted the need to explain and display clearly that the process of story collection and publication did not hide any vested commercial interest:

*"I find myself telling people about it. And of course some of the people that I talk to about it don't agree with it. They ask the questions that, it's good gathering the stories, right? But some people ask me why is it that we put the stories online. And I respond by saying that we put it online to share it because people are interested in these stories. So my question was: what is the benefit of putting these (stories) online? And if people use the stories to do something... how will that be solved?" (B2).*

The final evaluation meeting held in the community of Surama, in May 2015, indicated that the Pantanê Blog intervention had the potential for improving the collective wellbeing of North Rupununi communities. It was suggested that such interventions could notably play a role in preserving the language and the traditions of storytelling in the communities, and that initiatives like Pantanê Blog could act as



stepping-stones for a better involvement of youngsters in the preservation of culture for future generations:

*“Because our culture is our identity” (CE).*

However, in order to do so it was argued that the process of story collection and diffusion should be prioritised over the online dissemination strategies.

Consequently, the participants’ initiatives to broadcast the stories on the local radio and to organise a story writing competition in the high school were unanimously praised by community attendees:

*“The audience felt it was a good project, but they insisted that they wanted it to have a local impact. For instance, they suggested that we should have more storytelling in schools. Overall, they said that this initiative was a good thing as it could help start reviving the Makushi storytelling in communities” (Personal notes, final evaluation, 26 May 2015).*

## 7.6 Conclusion

As a researcher-led ICT intervention, the Pantanî Blog project gave me an opportunity to apply, and further develop, the evaluation framework first hand by collaboratively implementing an ICT intervention. The combination of traditional storytelling with modern recording tools was generally well received. So was the idea of producing local content and uploading it on internet. However, the final evaluation suggested that the impact on wellbeing would have been greater if the intervention had used a mixed-mode communication strategy from the outset, including radio, print and online publication.

The challenges encountered in implementing the intervention opened my eyes on the difficulty to carry out participatory interventions, in particular when done over a long distance. It required me to be exemplary in my communication and to continuously engage the participants throughout the intervention. But it also highlighted the value of having a flexible implementation framework when intervening in complex situations, in order to cope with unforeseen circumstances. On-going monitoring and evaluation allowed the intervention's participants to adapt to the multiple challenges that were encountered throughout the intervention, from access-related challenges and communication issues, to the more fundamental questions of control and sustainability. The intervention contributed to increase the participants' content capabilities and to generate an online portal of traditional Amerindian stories. But the approach also empowered the participants to take initiatives to increase community engagement, such as the radio programme and the school competition, and to bridge across generations. In other words, it allowed the participants to turn what was essentially a small researcher-led intervention into a participant-led community engagement aimed at increasing wellbeing.

The following chapter marshals the results of the four case studies into a discussion informed by the literature, in order to draw a conclusion to this doctoral thesis, answering the research question, outlining the contours of a Systemic Implementation and Evaluation framework (SIE), and identifying its contribution to the literature.

# Chapter 8. Discussion

## 8.1 Introduction

In stating the aim and objectives of this doctoral thesis, three main research questions were asked:

1. In the context of the North Rupununi, Guyana, how do selected national and local ICT interventions affect Indigenous communities' wellbeing?
2. What is the role of evaluation in ICT interventions, and how might it be enhanced in order to directly address Indigenous wellbeing?
3. What recommendations might be made from this doctoral research to inform policy on ICT interventions for Indigenous wellbeing?

As part of this discussion chapter, I take a step back from individual case study findings to look at results across case studies, in an aggregated way, and to reflect on the evaluation framework I have proposed, developed and applied, as a way to answer the three research questions. Section 8.2 begins by addressing research question 1, drawing on the literature on ICT4D, the capability approach, and Indigenous wellbeing as a background for discussing case study results. Section 8.3 discusses research question 2. It elaborates on the evaluation principles outlined in Chapter 3 and explains how they might be used as part of a Systemic Implementation and Evaluation (SIE) framework, as informed by its application to the case studies. It also discusses the implications of the framework for ICT4D research and practice. Section 8.4 addresses research question 3 and provides policy recommendations for

ICT interventions and their evaluation. It focuses on how the experience from the case studies and the researcher-led intervention can inform a better way of doing ICT interventions, informed by systemic evaluation principles.

## 8.2 Discussion on Case Study Results

*Research question #1: In the context of the North Rupununi, Guyana, how do selected national and local ICT interventions affect Indigenous communities' wellbeing?*

### **8.2.1 Participation, Ownership and Power**

Historically, the significance of technology transfer and implementation approaches (Ad Hoc Panel 1987; Cyranek & Bhatnagar 1992; Grant-Lewis 1987, 1992; Lind 1991; Odedra 1992), as well as technology adoption (Al-Gahtani 2003; Rose & Straub 1998) in the information systems literature cannot be denied. These approaches have largely contributed to shaping the emerging field of ICT4D research in the 1990s, and continue to do so today. The question of how to efficiently deliver high quality ICT interventions contributing to infrastructure, accessibility and use in order to reduce poverty and increase wellbeing, has also been an important concern for policy makers and development practitioners (Heeks 2010). The UN Millennium Development Goals' (MDGs) focus on addressing the *digital divide* (Kenny 2000; Mbarika et al. 2007; Norris 2001; Wresch 1998) or the implementation of supply-driven interventions, such as the telecentre model for poverty reduction, provide telling examples of these endeavours. More recently, the post-2015 Sustainable Development Goals (SDGs) which were adopted in September 2015 by the UN

General Assembly, reasserted the importance of ICT access as part of its goal on sustainable infrastructure, resilient industrialisation and innovation:

*"[To] significantly increase access to information and communications technology and strive to provide universal and affordable access to the internet in least developed countries by 2020" (United Nations 2016).*

While there has been extensive focus on ICT diffusion and adoption, there are interrogations about the actual impact of such interventions on the wellbeing of their beneficiaries. Some have questioned the tendency of these approaches to favour exogenous, top-down, techno-centric responses to poverty, and suggested a shift toward endogenous, bottom-up and people-centred initiatives (Kleine and Unwin 2009). A frequent criticism about the design of ICT interventions suggests that approaches based on technology diffusion and adoption tend to favour one-size-fits-all solutions to what are in fact very diverse real-world situations. Heeks (2008) calls this a *design versus reality gap*, "a mismatch between the assumptions and requirements built into the design and the on-the-ground realities of poor communities" (Heeks 2008:29). In other words, they are solutions in search for a problem, and their design is not always adapted to the context in which they are deployed, nor to the wellbeing priorities of their intended beneficiaries.

The inclusive participation of beneficiaries in the design and implementation of ICT interventions is often advanced as a way of ensuring that such interventions are more adapted to the context in which they are deployed, and better respond to user needs (Heeks 2008). Ensuring the participation of the beneficiaries is not solely a way of ensuring that interventions are more adapted to their needs and more successful in

the long run. It is also a question of legitimacy and ethics, a necessary step towards emancipation (Freire 1970a). In “Tools for Conviviality”, Illich (1973) called for enabling users to exercise agency over the design of tools and infrastructure intended for them, arguing that, such conviviality bears an intrinsic ethical value. This suggestion has notably been picked up and developed in Johri and Pal’s (2012) Capable and Convivial Design. A similar ethical stance can be attributed to Sen (1999), when he argues that the involvement of beneficiaries in the design and implementation of social arrangements should be regarded as a constitutive part of people’s agency freedom (Sen 2002a). While this ethical principle should apply to any beneficiary in any intervention, its relevance is also specific to Indigenous peoples, whose collective right to self-determination is recognised by the General Assembly of the United Nations as a central feature of their wellbeing (United Nations 2008).

Looking at the level of participation of beneficiaries in the design and implementation of four ICT interventions in the North Rupununi, I have identified important discrepancies between the case studies. The official OLPF Project Plan, which had been drafted based on consultations with civil society organisations, claimed that engaging beneficiaries in the planning and implementation stages of local OLPF interventions would be a priority (Project Management Office 2010). The document suggested, for instance, working closely with local institutions and organisations to ensure that these interventions were aligned with community development priorities. The results showed however that the actual implementation of the OLPF intervention followed a single, blueprint approach aimed at distributing free laptops and at providing basic ICT training to all Indigenous communities. Rather than a design-reality gap (Heeks 2002), the OLPF was affected by a *design-implementation*

gap. This gap was represented by the discrepancy between the original participatory and people-centred model of intervention proposed in the OLPF Project Plan, and the intervention's exogenous and techno-centric implementation. Framed as passive recipients, beneficiary communities had little say on the process of intervention, and even had difficulties obtaining basic information, such as whether internet access would be provided or not, or when the laptops would be delivered. In this regard, and in several others, the OLPF intervention was a resounding failure.

In contrast, the Surama ICT intervention was endogenous to this small North Rupununi community. It corresponded to a plan designed locally to increase the efficacy and efficiency of an important community resource: the ecolodge. The implementation of the intervention was driven by the Village Council, drawing on partnerships with foreign organisations to build the necessary capacities of the ecolodge workforce. But although there was community ownership, not all community members had equal access to the resource. The data gathered through semi-structured interviews and participant observation in the Surama ecolodge and the wider community suggested that the rules surrounding internet access favoured the staff members, who in their majority came from the same family. They could use it for free, even when not on duty, whilst the rest of the community was asked to pay a fee. Through their employment at the ecolodge, they were also entitled with gatekeeping power (Barzilai-Nahon 2005), and able to discretionally grant access to other members of the community.

Kleine (2009b) has suggested that ICT interventions often involve a small elite and are likely to generate winners and losers, depending on individual interests and

group loyalties. The case of Surama showed that even if the intervention seemed locally owned, a relatively simple resource like internet access could exacerbate existing, or generate new power dynamics within the community. This points to a fundamental issue with ICT diffusion and adoption approaches in development interventions, that is, the fact that they are too 'technical'; they tend to treat technologies as reified entities, a particular "piece of equipment, application or technique which provides specifiable information processing capabilities" (Walsham et al. 1988:190), and which can be transferred. Such approaches tend to see ICT interventions from a context-free, techno-determinist perspective (Avgerou 2010; Qureshi 2012). The link between these technologies and particular social, economic and political agendas is overlooked (Diaz Andrade & Urquhart 2012; Kleine & Unwin 2009), and the processes and impacts of ICT production, storage, propagation and use are not always questioned (Orlikowski & Iacono 2001).

Power relationships, in particular, underpin the design and implementation processes behind each intervention, and are visible in the institutions that regulate the access and use of ICT (Kleine 2013). They can also be less visible, e.g. embedded in the post-colonial discourse on modernisation (Young 2003), or derive from the production of culture and information that results from ICT usage (Evans 2002). Dynamics of power are even at play within communities (Guijt & Shah 1998), as was shown in the example of Surama. This explains why some researchers have called for more critical work in ICT4D, in a field that is still dominated by interpretive research (Lin et al. 2015), and to focus on social issues, such as freedom, power, social control, and values with respect to the development, use, and impact of ICT (Myers & Klein 2011:17).



Furthermore, the case studies also confirmed that, however desirable they may be, participatory interventions are full of contradictions and challenges (Bailur 2007a; Heeks 2008; White 1996), and require sufficient time and resources to organise:

*“Involving people can be expensive in various ways and, in some instances, can paralyze decision-making, holding development investments hostage to unproductive activism and reinforce local power structures and power struggles” (Botes & van Rensburg 2000:55).*

I had a first hand experience of such challenges with the researcher-led intervention, which had sought to include the participants throughout the design, implementation and evaluation process. The question of the selection of participants taught me a valuable lesson on the potential harm that might inadvertently be perpetrated by such interventions (Traxler 2013). The discretionary and informal selection of participants according to criteria defined by me, and which had not been made clear to the wider public generated some jealousy in the communities towards the group selected. As a result, three of the four participants reported some complaints by community members who argued that it was *always the same people* who benefited from external projects:

*“[A]t the [beginning] it was a little upsetting for some community members to accept that I was picked to be a part of the project but now since the stories are coming out they are very happy that I’m doing it” (B3).*

*“Oh yes, my colleagues had been acting weird since my engagement [in the intervention]. But explaining to them has changed their perspective but yet it’s*

*observed now and again" (B1).*

*"Yes, I came across jealousy from others, where they mentioned that I was chosen [as] one of the bloggers because I am in [the] favour of the person who is the Coordinator. It didn't matter to me personally, however it always happens where others will try to discourage [me] from being exposed or [to] upgrade myself and it's always there so that I can be bolder and build my capacity" (B2).*

Research has highlighted the dilemma of working with communities that are accessible versus a willingness to reach out to disadvantaged, as well as more remote communities in ICT4D interventions (Anoka et al. 2009; Ho et al. 2009). A parallel can be made here with the selection of individual participants. Due to the specialised skills needed to take part in the intervention, the people who were going to be selected for this intervention were also those who were more likely to be generally solicited in other projects. Having had more resources and time in the field would have allowed me to be more open in the selection of participants, and give an opportunity to people with fewer capabilities.

Another example concerns how problems of access and bandwidth affected the implementation of the project, and the distribution of roles amongst participants, including my own (White et al. 2003). In essence, connectivity issues had the effect of increasing my control over the organisation of the intervention, and over the editing of the stories. Once again, budgetary constraints and the limited time spent in the field challenged my ability to maintain a high level of involvement of all participants, and their respective communities. This echoed some of the criticism formulated by Ozanne and Saatcioglu (2008) about the limitations of participatory action research

interventions, and the necessity to invest sufficient resources in the process to avoid falling into the trap of the illusion of participation (Kapoor 2005; Kothari 2001; Waddington & Mohan 2004).

Nevertheless, these findings suggest that, although participatory ICT interventions are challenging, they remain a fundamental necessity for Indigenous communities. Interventions that are led by a community, whose control over access and use is therefore high, are more successful and legitimate than interventions that are planned, designed and implemented from outside Indigenous communities, without involving them (Freire 1970a; Illich 1973; Johri & Pal 2012; Sen 2002a). In other words, such interventions are more likely to have positive impact on wellbeing. This doesn't mean that this process is necessarily fair. In its course, it can contribute to increasing inequalities, with the most capable advancing faster while the least capable get left behind.

### ***8.2.2 Multidimensional Impacts of ICT Interventions on Indigenous Wellbeing***

It has been suggested that much ICT4D research has shifted from a focus on ICT readiness, availability and uptake to the question of the impact of ICT interventions on societies, groups and individuals (Heeks & Molla 2009). A literature survey by Andersson and Hatakka (2013) noted increasing contributions from sociological studies, i.e. with a focus on understanding power and tensions in socio-political arrangements, using actor network theory (Walsham 1997), structuration theory (Giddens 1984), or the network society theory (Castells 2011). Impact studies also include studies on the impact of ICT on economic growth (Abraham 2007; Jensen

2007; Levy et al. 2010), and multidimensional studies, building on the sustainable livelihood approach (Duncombe 2006; Molla & Al-Jaghoub 2007; Parkinson & Ramirez 2006; Soriano 2007), and the capability approach (Adaba & Rusu 2014; Alampay 2005; Aricat 2015; De' 2007; Grunfeld 2013; Hatakka & Lagsten 2012; Madon 2006; Musa 2006; Smith et al. 2011; Thapa et al. 2012; Vaughan 2011; Zheng 2009; Zheng & Walsham 2009). This theoretical diversification, while opening the field to new understandings, also provides for an increasingly complex evaluation landscape for ICT4D researchers and practitioners. It shifts the attention from an almost exclusive focus on quantitative measures about the technicality of technology transfer and use, and integrates qualitative measures about the intervention's impacts on individuals, communities and societies. It also opens up an opportunity to reflect more carefully on how such interventions may affect wellbeing.

The analysis of case study interventions supports the idea that the impacts of ICT interventions on wellbeing can be profound – and indeed multidimensional, i.e. affecting multiple aspects of the lives of individuals and communities in their political, social, economic and cultural dimensions. In Yupukari, for instance, the ICT-connected library had contributed to improving the literacy of youngsters in the community, an outcome that had been planned by the intervention's owner from the outset. But the systemic evaluation of the intervention showed that this outcome was only a small part in a much bigger picture. The results indicated that the community's internet had also been used to support the establishment of a guesthouse, leading to the creation of new job opportunities within the community. Internet-mediated communication had allowed Yupukari to reinforce its cooperation with other communities like Surama, as well as tourism stakeholders across the region. At the

level of individuals, internet was also used to maintain relationships with family members and friends living elsewhere, as well as for leisure. This suggests that the intervention contributed to triggering new capabilities, at both the individual and the collective levels, i.e. through organisation and networking (Gigler 2015).

In Surama, where satellite-based internet had originally been installed as a means for supporting the development of the community's ecolodge, the intervention had also affected several dimensions of the life in the community. A few years after its installation, internet had transformed the ecolodge into a *proto* information and communication hub for the community, and it was used for a variety of tasks by individuals and employees of the ecolodge, as well as by members of the Village Council. However, the results also showed that although both collective and individual capabilities increased as a result of the ICT intervention, these capabilities did not increase in an equal proportion for everybody. In Surama, most community members only benefitted from the capability gain indirectly, i.e. through someone else, echoing in this regard Foster and Handy's (2008) concept of *external* capability. And while there were signs of collective capability gains, e.g. improved community governance and awareness thanks to better information and communication, only the ecolodge staff had really seen an increase in their personal capabilities. In other words, the case of Surama showed differentiated capability gains for individuals in the community, a reality that was captured thanks to the critical approach used as part of this methodology, but which non-critical evaluation frameworks would likely have overlooked.

*“In my view it brought the communities closer, but... [he hesitates] at the same time, in those days, when there wasn’t telephones and Radio Paiwomak, communities were closer together because you depended on your neighbors, on your friends to tell you what the news were. People took more time off to go to people’s home. Today we don’t really have to go to each other’s home, I could call you so I wouldn’t need to see you” (19).*

Evidence also highlighted that ICT interventions could, in certain cases, negatively affect collective and individual wellbeing. One dimension where the tension between positive and negative impacts appeared most strikingly was related to how ICT affected Amerindian cultural practices and traditions. In Yupukari, the wide exposure to ICT and the success of the intervention, which had seen many youngsters board to secondary school, had led to a shift in values in younger generations. The fact that the intervention had dramatically increased literacy in the community and that pupils and parents were choosing to pursue their education in secondary school suggests that the intervention had contributed to increasing their capabilities. However, this gain in opportunities was also generating new needs, through a positive feedback effect (Flood 2010), which the community was not necessarily able to satisfy or accommodate. Those returning from the state-run secondary school were less inclined to espouse the traditional subsistence, and self-help model of their parents, and more likely to embrace the modern lifestyle and associated transactional relationships.

*“[I]n the evolution of the Information Society, particular attention must be given to the special situation of indigenous peoples, as well as the preservation of their*

*heritage and their cultural legacy” (International Telecommunication Union 2005).*

A frequently reported fear in both Yupukari and Surama was that those more exposed to ICT were at risk of becoming passive consumers of western cultural products, rather than active practitioners of their own culture, a risk which has also been identified by other researchers (Diaz Andrade & Urquhart 2012; Evans 2002). The growing time spent by individuals using ICT and their exposure to individualistic and materialistic values were said to accelerate the erosion of traditional Amerindian culture. This issue was particularly visible in Yupukari, where ICT access was open to the public, but much less so in Surama, where access was essentially restricted to a certain group of people.

In “Development as Freedom”, Sen (1999) recognises that technology-induced change can lead to a loss of traditions, which can in turn cause anguish. He suggests that it is up to each group, or society to determine what it wants to preserve from old forms of living. One question that might arise is whether an ICT intervention that is endogenous to an Indigenous community, or where Indigenous participation is important, is more likely to espouse or support Indigenous traditional values than interventions that are designed and implemented by outsiders? Bamba’s (International Expert Group Meeting 2010) list of principles for self-determined Indigenous development, which was introduced in Chapter 2, sheds light on the specificities of Indigenous wellbeing priorities, and how they contrast with the values that tend to be promoted in mainstream development models and, by extension, in many ICT4D interventions. In the case of the One Laptop Per Family intervention,

values associated with the global development model, i.e. productivity, efficiency, commerciality and results, appeared to dominate the intervention purpose. The intervention's objectives were to provide access to ICT and to increase the population's ICT skills, to stimulate (economic) development in local communities. It followed a systematic/purposive and modernist model of development, which arguably challenged the more fundamental values of, e.g. sustainability, process and subsistence that characterise Indigenous wellbeing philosophies, as exemplified by Bamba's list or in the Buen Vivir philosophy (Gudynas 2011).

Similar values of commerciality and efficiency informed the purpose of the Surama intervention. However, these were ultimately subordinated to the interest of the collectivity: the mission of the ecolodge was to provide more *opportunities* to community members and sustain the community as a whole by, for example, retaining youth within the community with employment, and using ecotourism for maintaining and reinforcing traditional practices, rather than letting them be undermined by it. The researcher-led intervention, by contrast, had been designed in cooperation with the participants as a response to the issue of culture disappearance in the North Rupununi. The aim of the intervention was to safeguard and promote Amerindian culture; it was advocating values of naturality, spirituality, collectivity, sustainability and subsistence. But the high-tech means chosen to document and publicise the stories, and the selection of the most able individuals were also informed by values of productivity, individuality, technicity (engineered), rationalism and results. In other words, it combined traditional values with modernist ones.

The categories proposed by Bamba suggest that some of the values embedded in, and



promoted through ICT interventions may contradict other values associated with Indigenous worldviews. These categories give an indication on the direction of development that is being pursued, whether it is heading towards the modernist global development model or whether it is anchored in traditional Indigenous philosophy. However, the importance of these categories should not be overstated. For instance, some interventions may borrow from both sides of the value table, sometimes from elements set in direct opposition, e.g. collective versus individual. More importantly, they do not necessarily represent values shared by all Indigenous groups. Arguing the contrary would lead us on a similar, in my view mistaken path as those who advocate the use of externally designed, objective list approaches for evaluating wellbeing (Dolan et al. 2006). It would also run the risk of essentialising Indigenous identity, i.e. freezing and reifying it, an issue that was notably raised by Jackson and Warren (2005). It can indeed be argued that a group's knowledge and identity are not definite characteristics but the product of complex sets of relationships, which have often grown from changes and influences over time and generations (Agrawal 1995; Briggs 2005; Kenrick & Lewis 2004; Saugestad 2001). For instance, de la Cadena and Starn (2007) describe indigeneity as:

*"[A] process; a series of encounters; a structure of power; a set of relationships; a matter of becoming, in short, and not a fixed state of being" (2007:11).*

Lessons from the Surama and Yupukari case studies have shown that even when Indigenous communities exert a high control over the design and implementation of ICT interventions, they may nevertheless embrace values associated with modernity, such as commerciality. Inversely, the researcher-led intervention demonstrated that

ICT could be used to preserve Indigenous identity, bridge across generations, and to link traditional Amerindian culture with other cultures around the world. This suggests that the concept of culture is dynamic and emergent (Westrup et al. 2003), and that technological change and novel ideas percolate within and among Indigenous communities as part of an adaptation process (Belton 2010; Diamond 1999; Dyer-Witthford 1999). In the words of Agrawal (1995):

*“What is today known and classified indigenous knowledge has been in intimate interaction with western knowledge since at least the fifteenth century. In the face of evidence that suggests contact, variation, transformation, exchange, communication, and learning over the last several centuries, it is difficult to adhere to a view of indigenous and western forms of knowledge being untouched by each other” (Agrawal 1995:422).*

The Surama and Yupukari case studies have shown that ICT interventions have the potential to impact Indigenous communities in a wide range of different, often unexpected ways, which can be both positive and negative for their wellbeing. They have also shown that such interventions can, in turn, generate new, or accelerate existing changes and adaptations within communities, affecting people’s long term preferences and aspirations, as already argued by Bowles (1998) and Elster (1983). This suggests that the actual value of an ICT intervention, in other words whether it is positive or negative for Indigenous wellbeing, depends largely on whether it is imposed or chosen by this community, and whether the appropriate social mechanisms are in place to regulate its access and use in the community. These mechanisms must equally allow the community to reflect on the long-term

consequences of ICT on its wellbeing, and take the necessary steps to adjust access and use if it starts having a negative impact on the community's wellbeing. To paraphrase Foth (2006), an intervention that situates itself within the nexus of people, place and technology has to cope with the complex sum of the individual characteristics of each variable. In light of these lessons, the development of a complexity-sensitive evaluation framework remains an important condition for increasing the impact of ICT interventions on Indigenous wellbeing.

## **8.3 Toward a Systemic Implementation and Evaluation (SIE) Framework for ICT4D Interventions**

*Research question #2: What is the role of evaluation in ICT interventions, and how might it be enhanced?*

### **8.3.1 Principles of SIE Framework**

Having scoped the ICT4D evaluation and wellbeing literatures, I have argued that there is often a discrepancy between the linearity of many evaluation models, such as the simple input-output model, and the complexity of the real-world situations they are trying to make sense of (Hummelbrunner 2011). In systems thinking terms ICT4D interventions can be seen as responses to complex problems in diverse and ever-changing operating environments characterised by non-linearity and multiple feedback loops (de Haan 2006; Marra 2011). The evaluation of the impact of an intervention on wellbeing therefore requires departing from the linear approaches, where evidence determines policy goals, that characterise technocratic models (Productivity Commission 2013), and embracing a more iterative way of working.

Some of that complexity is also linked to the focus of evaluation on wellbeing, a concept that is at the heart of a multiplicity of, and sometimes conflicting approaches and theories, including objective and subjective approaches (Parfit 1984). In Chapter 2, I have introduced the capability approach as an alternative normative framework for the evaluation and assessment of individual wellbeing and social arrangements (Robeyns 2005). Born from Amartya Sen's scepticism towards the universalisability requirements of objective list theories and the narrow view of wellbeing adopted by utilitarianism, the CA proposes a third approach, which effectively deepens the definition of wellbeing by weaving together the notions of functionings, capabilities, agency and freedom. In the field of ICT4D, the approach has shown that it could help shift the focus on the wellbeing impacts of ICT interventions, whereas the widely used technology diffusion and adoption theories are generally associated with a focus on outputs and outcomes, in other words on the early stages of the ICT Value Chain (readiness, availability, uptake) (Heeks & Molla 2009). In short, the CA has shown that it has potential for helping ICT4D practitioners and researchers have a better understanding of how ICT interventions affect individual wellbeing.

While recognising that the impacts of ICT on Indigenous wellbeing are indeed multidimensional, the *Systemic Implementation and Evaluation* (SIE) framework, which I discuss in this section, takes the logic of evaluation to a different, more practical and critical level. It draws on systems thinking methodologies, in particular on Soft Systems Methodology and critical systems thinking to help set the attention on the inevitable clashes of worldviews that characterise interventions involving multiple stakeholders, thereby allowing a critical reflection on the nature of these interventions and the changes brought about. It does so by mapping

interrelationships, engaging with perspectives, and evaluating boundary judgments, using criteria for monitoring and evaluation (efficacy, efficiency, effectiveness).

Influenced by pragmatism, the framework also uses the results of this evaluation to produce recommendations on how to transform and improve the intervention. The following principles are associated with the SIE framework. It consists of a set of stages and techniques that can be used by policy-makers and practitioners to make the evaluation of ICT interventions on Indigenous wellbeing more systemic:

1. **Context-sensitive:** It recognises that interventions happen in certain contexts, which need to be understood as part of our evaluation of the intervention itself. It uses techniques from Soft Systems Methodology (SSM) and Critical Systems Heuristics (CSH) to scope the context of intervention through an exercise of mapping interrelationships and identifying stakeholders.
2. **Purpose and values:** The framework seeks to understand the original purpose behind ICT interventions, as well as the worldviews of its stakeholders. It engages with those perspectives to define an ideal model of intervention. In doing so, it provides a baseline for evaluation and helps reveal the dominant worldview associated with the system of interest.
3. **Design and implementation:** It looks at the involvement of the intended beneficiaries in the design and implementation of the intervention as being one of the central elements for enhancing ownership, sustainability and wellbeing.
4. **Evaluation:** It uses the criteria of efficacy, efficiency as well as effectiveness to monitor and evaluate the intervention, looking at those outputs that are

within the boundaries of the system of interest, and those that are outside the boundaries, including outcomes and long-term impacts on wellbeing.

5. **Reflexivity:** It suggests the need to address the question of power in the primary (ICT intervention) and secondary interventions (evaluation of ICT intervention), through reflectivity and reflexivity (Reynolds 2015).
6. **Adaptive action:** It acknowledges the systemic notions of messiness, feedback and emergence and introduces an element of pragmatism according to which the aims and objectives of an intervention can be changed when colliding with a challenging and changing reality, or to generate more positive impacts on wellbeing. This built-in adaptability is a way to address the design-reality gap (Heeks 2002), which often characterises real world interventions.

Figure 22 is a proposal for mapping the SIE framework onto the input-output model of evaluation, which is represented in its central spine as a linear chain of events. It features the following six successive stages, including needs assessment, planning, inputs, outputs, outcomes and impacts. The first three stages of the model – needs assessment, planning and inputs – are informed by the mapping of interrelationships (sources of influence) and an engagement with perspectives to increase understanding of the context and aims of ICT4D interventions. The stages occurring after implementation – outputs, outcomes and impacts – are monitored and evaluated through the criteria of efficacy, efficiency and effectiveness. By measuring the long-term effectiveness of an ICT intervention, the model focuses on its multidimensional development outcomes, and impacts on wellbeing. It recognises the importance of

early stages (readiness, availability and uptake) as necessary but not sufficient building blocks for achieving positive impacts on wellbeing.

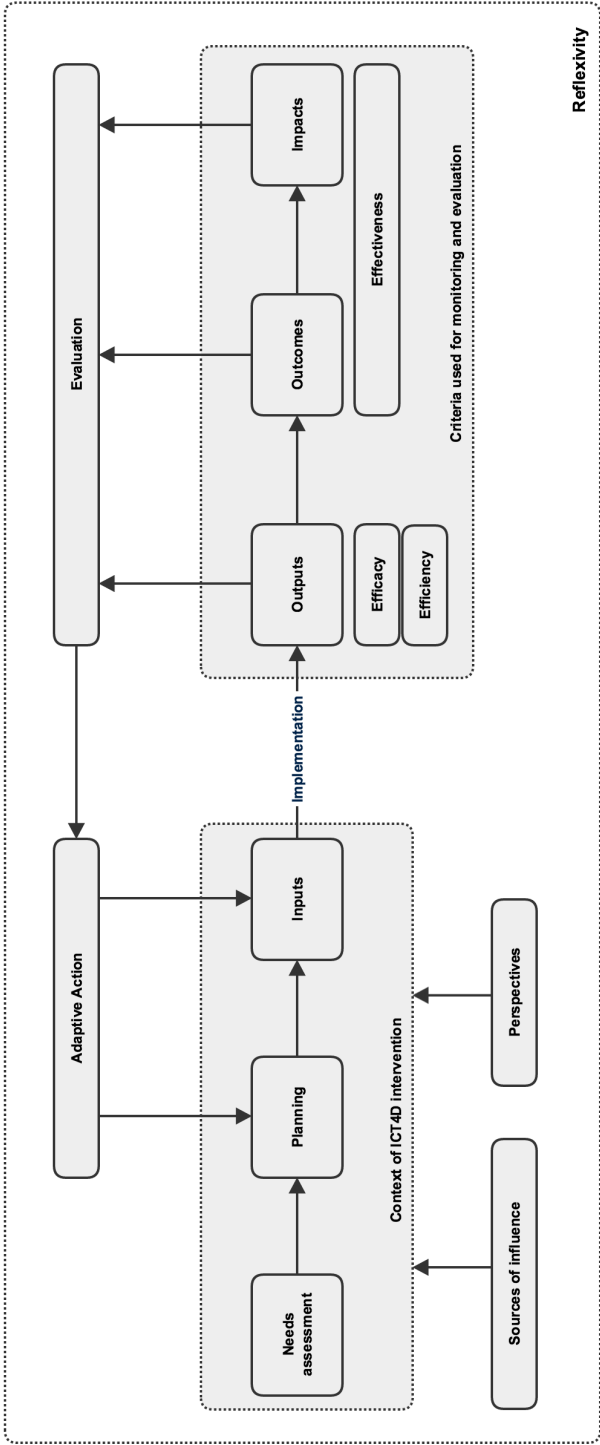


Figure 22 - An application of the SIE framework to the input-output model

This evaluation is then used to propose or undertake adaptive action, linking back to the *planning* and *inputs* stage of the model, and allowing for a new cycle to begin. Finally, the whole framework is subject to the practice of reflexivity, enabling iterations and adaptations to changing circumstances.

### **8.3.2 Reflection on the Application of the SIE Framework to Fieldwork**

*"[The practice of reflexivity] can make the messiness of the research process visible to the researcher who can then make it visible to those who read the research and thus avoid producing, reproducing, and circulating the discourse of research as a neat and linear process" (Ortlipp 2008:704).*

In this section, I reflect on how fieldwork circumstances, i.e. the environmental, financial and social conditions in which the research was carried out, might have influenced the practical application of my methodological framework, and how I adapted to these challenges. An important constraint was related to the long distances and high travel costs in the North Rupununi, which prevented me from travelling to the case study areas as much as I wanted to. Another, more personal challenge concerned my very limited social life and the nutritionally poor diet I was on when living in Bina Hill. Having been lent my own small thatched-roofed house had the advantage of giving me a bubble to which I could retreat after a day's work, but it also made my stay quite lonely. Bina Hill was not a very social place in evenings, particularly after the NRDDDB staff left the area to go home, and the few students and teachers remaining on site retreated to their dorms and houses. The lack of social spaces also affected my diet. The food I ate mostly came from tins, with very few fresh fruits and vegetables, or meat, as I did not have a fridge (in fact I did have a fridge but



I realised after a couple of days of use that it was draining all the energy stored from the solar panels on the roof when I was woken up in the middle of the night by a resounding alarm). Everything had to be cooked on the spot and eaten right away as every night, the army of cockroaches established in my house would clean up any left overs. Many of my methodological choices had to balance theoretical and academic ideals with the simple practicalities of being in the North Rupununi and living my life as a researcher there. This section focuses on two types of challenges in particular. Firstly, challenges related to the collection of data. Secondly, issues related to ethics and the validity of data.

### ***Challenges related to the collection of data***

*"[The] outputs of our fieldwork will necessarily be incomplete records of our progress in understanding parts of wholes that exceed our abilities" (Everett 2004:141).*

Due to its holistic nature and the range of case studies covered, the application of the SIE framework required access to diverse types of data, from a variety of sources, and across each intervention's lifespan. While it is accepted that the collection of data in a real-life setting requires planning (Yin 2014), one important lesson of undertaking fieldwork is that it is impossible to control all contextual variables (Everett 2004). In addition to planning, successful fieldwork therefore also requires creativity, pragmatism and opportunism (Darke et al. 1998). In my research journal, I have reflected on these aspects, and how opportunities were seized when things did not go according to plan. One of the most important challenges I was faced with concerned the delay in the procurement of my research permit, which had an impact on my

initial plans for collecting data in the case study communities, and even threatened the success of my fieldwork:

*“The Ministry is apparently reluctant to deliver my permit despite the pressure of the local supporting organisation (Iwokrama), and is not really concerned with the fact that I only have a limited amount of time in Guyana. The request having been introduced last October we are now six months after the introduction for a procedure that is supposed to last three months at the most” (Extract, research journal, 31 March 2014).*

This delay significantly reduced the amount of time I could spend outside Bina Hill, as well as my ability to collect data from some key stakeholders. It put me in a situation where I had to improvise and reassess some of my data collection techniques as well as my potential case studies, and to focus on those where I had more chances to gather sufficient information. But even when I could plan ahead, fieldwork uncertainties meant that I had to always keep my options open, and to constantly adapt to unexpected changes. For instance, the following extract discusses how I transformed a missed interview into an opportunity to meet with one community leader in Bina Hill:

*It is not because your appointment does not show up that your day is necessarily ruined. This morning I was supposed to meet [Name], who is on the Aranaputa Village Council and one of the pioneers behind Radio Paiwomak. But [He] did not show up at the expected time, nor at the radio show he was supposed to attend before. While waiting for him, I noticed [Other name], Toshao of [a community] was sitting at the main table in the main meeting space at the first floor of the*

*Bina Hill radio building. I knew he was a kind person, I decided to go for a straightforward approach and asked him if he would be willing to take part to an interview, the answer was yes. (Extract, personal journal, 18 February 2014)*

The differences in type, scale and timeframe of each case study also influenced the quantity and quality of data I could collect. The OLPF was a national-level intervention, whereas the Surama and Yupukari interventions took place at the community level. The researcher-led intervention also took place at the local level, but it was not limited to a single community and it essentially involved individual participants. In addition, these interventions occurred during different periods of time. The Surama and Yupukari interventions were both initiated in 2006, and were ongoing at the time of this research, whereas the OLPF was launched in 2011. The Pantani Blog intervention took place during a limited period, between June 2014 and May 2015.

Given these circumstances, I could gather plenty of data on the early stages of the OLPF intervention, including on the intervention design and implementation. This data allowed me to map interrelationships, to identify stakeholders and to engage with their perspectives. However, due to the issues with my research permit, I was not able to interview government officials, and I had to rely on more documentary and digital data sources than I had anticipated. Logically, the inability of the Ministry of Amerindian Affairs to distribute the laptops to the communities of the North Rupununi prevented me from collecting any data about the intervention's long-term impacts. For the researcher-led intervention, on the other hand, I had plenty of data on each stage, which was reinforced by my own stake in the intervention, but the

limited scope and timeframe of intervention also challenged my ability to draw any definitive conclusions on its impact on wellbeing. By contrast, there was much more information available on the long-term impacts of the Surama and Yupukari interventions, which had both been implemented 10 years earlier. But this also meant that information on the needs assessment and planning phases was more difficult to collect. Contrary to the OLPF, there were no written records (official documentation and newspaper articles) of the implementation of the intervention. Information on the local case studies was essentially part of the social memory of communities (Mistry, et al. 2014). Yin (2014) has argued that multiple cases studies should be considered as multiple experiments, and follow replication logic rather than sampling logic. Given the range of case studies I focused on, the systematic application of the evaluation framework to each case study was the main method I followed to ensure the validity of the results and that equivocal elements did not influence the direction of the findings and conclusions. These findings should however be read in light of the challenges mentioned in this section.

### ***Challenges related to the validity of data***

Another aspect of reflexivity concerns the validity of data. This question is fundamentally related to the methodological choices made in this research. In practice, the methodological approach was essentially built using qualitative methods of data collection, drawing on interpretive and critical methodologies (Myers & Klein 2011). This focus allowed me to gain a better understanding of multiple perspectives, and to identify systemic issues of power and control. Quantitative data was also marginally used, for instance through the collection of surveys and, in the case of the

researcher-led intervention, the collection of website visit analytics. Qualitative and quantitative data can be synergistic (Eisenhardt 1989). The latter can help strengthen the rationale, or underlying relationships identified through qualitative methods. Similar arguments have been made by Jick (1979) and Mintzberg (1979). For Habermas (1972), combining multiple methodologies can produce a more comprehensive form of knowledge. It can therefore increase the validity of data. Yet, it is also true that, when confronted with a choice of where to invest limited time and resources, the focus on qualitative methods will provide more insights into understanding meaning and purpose (Guba & Lincoln 1994), provided that the inevitable interference of personal experiential background with the observations made during fieldwork is made clear (Adler & Adler 1998; Flick 2014).

Maharaj (2016) has suggested that researchers are affected in their ability to conduct participant observation by the attributes they bring to fieldwork, such as their culture, background and preferences, which in turn can affect the validity of data. In my case, it was a mix of assumptions, such as a belief in the central principles of modernisation, including democracy, emancipation, development and progress, with a drive for listening to subaltern voices (Mohan & Hickey 2003). These assumptions are central for explaining the question of positionality, which influences the process of intervention, its location as well as its outputs (Cook 2005). As Mistry et al. (2009) and Mistry & Berardi (2012a) have argued, issues of positionality include “educational status, language, financial power, overlaid onto centuries of oppression and undermining of Indigenous culture and knowledge” (2012a:4). Whereas positionality concerned me, in my role of researcher and that of intervener undertaking an ICT intervention in an Indigenous context, it also concerned the

participants to the intervention. A potential challenge to the validity of the data collected lay in the possibility that their taking part in the intervention was motivated by social desirability (Veenhoven 2004), rather than by a genuine interest in the potential benefits of the intervention. Similarly, there was a risk that the enthusiasm communicated, e.g. during the evaluation meetings, was a result of adaptive preference, a phenomenon which has notably been discussed in feminist studies, and which consists in shaping and/or internalising a role, e.g. the researcher and the researched, and which leads one party to act in a way that he or she feels expected to act by the other party (Nussbaum 2001).

In addition, it would be naïve to suggest that the encounters, discussions, and activities in which I was involved did not have any influence on the people and communities I interacted with, just as they had an influence on me. The following extract from my research journal illustrates the sort of interrogations that arose when I was doing my fieldwork:

*“I have noticed a change in [hidden name]’s speech (and [other name]’s to a lesser extent) over the last few months. When I arrived in Guyana, he was not very outspoken when it came to politics, although he did tell me he was interested in running for the position of Toshao. However, more recently, he has become very openly critical of the Government, and speaks about it almost on a daily basis. He even questioned the [representative of the Ministry of Amerindian Affairs] with sarcasm at his last visit in Bina Hill and suggested we recorded him in Katoonarib tomorrow. He seems to be increasingly valuing political activism and recognises the potential of cyber activism. I think that the project of blogging has got him thinking*

*a lot about Indigenous rights and land. Maybe our discussions and exchanges over the last few months have shed a new light on the government's corruption and inconsistencies that are less bearable today than they seemed then." (Extract, personal journal, 14 May 2014).*

While reflecting on the impact of my presence as researcher, and partner in Project COBRA, in the North Rupununi is a difficult thing to do with certainty and exactitude, it is still a necessary exercise (Finlay 2002). It is with these potential threats to the validity of data in mind that I entered fieldwork, taking extensive personal notes, reflecting on observations and how my interpretations might be affected by my own experiences, both in my personal and professional lives.

### **8.3.3 Implications of SIE Framework**

ICT4D interventions typically involve multiple stakeholders, with their own ideas and claims about wellbeing needs, how ICT can address these needs and how the success of these interventions should be assessed. Looking at the split positions opposing Sen and Nussbaum on the question of what constitutes wellbeing, on who is entitled to determine its content, and on how this content should be established show the difficulty to carry out such an exercise. While Sen recognises the importance of public discussion for determining which freedoms should be promoted or discouraged by each society, he does not explicitly state how to achieve this, nor how to deal with the inevitable conflicts that would arise from people's own conceptions of wellbeing (Deneulin & McGregor 2010). Furthermore, critical systems thinking suggests that the concept of intended and unintended impacts might indeed be caused by systemic phenomena of emergence and feedback (Flood 2010), but they might also be

explained by the partial understandings inherent in perspectives (Churchman 1979), as well as by embedded power relationships among stakeholders (Ulrich 1983). The perspective(s) taken into account in the evaluation process therefore also have implications on how the intervention's outcomes are evaluated (Williams 2015). Therefore, I argue that an important aspect of the monitoring and evaluation process is to propose an inclusive framework that stakeholders can challenge, and which adapts to changing circumstances and new perspectives as they arise.

After launching Pantanî Blog and monitoring its process and outputs during the first few months of intervention, an initial evaluation took place. This evaluation essentially focused on the technical aspects of the intervention, relating to its efficiency and efficacy. For instance, it evaluated the number of stories produced by the participants, and discussed the access and communication issues that had affected the first few weeks of intervention. Some adaptive measures were taken, e.g. to solve issues surrounding online communication as well as to adapt the rate of production, which threatened to jeopardise the success of the intervention process. These adaptive actions resulted from a first confrontation between the intervention's ideal plans and their application in a real world context. Further down the value chain, a similar process of adaptation was used to increase the intervention's effectiveness, for instance by addressing a concern that the intervention, in its original configuration, only had a limited local impact. A cycle of monitoring, evaluation and adaptive action was taken to design measures for increasing the intervention's local impact, e.g. by creating a community radio programme and engaging with the secondary school, so that the communities of the North Rupununi could directly benefit from the intervention. A final evaluation, held in May 2015,



identified further ideas for improvement. The debate that took place in the village meeting in Surama raised important questions about the contents of the stories and the process behind story building. The individuals, who were involved in this final evaluation, suggested for instance that the whole community should be involved in the storytelling process, prompting suggestions for improving the intervention design. The project, having reached its term, was not able to implement these suggestions. However, they constitute important recommendations for the future, should this intervention be extended, or a similar intervention be planned.

The application of the SIE framework to the researcher-led intervention has demonstrated that interventions are more successful when they are constantly adapting to local realities, and responding to the evolution of demand, following a process of adaptive development (Patton 2011; Williams & Hummelbrunner 2011). It results in an organic intervention process that is much more in tune with the reality of a local context. Increasing the rate of success of ICT interventions requires parting with our appreciation of implementation and evaluation as being two separate interventions. In other words, it requires changing our perception about ICT interventions, from one-off interventions based on infrastructure development, to a conceptualisation of ICT as a social construction based on the dynamic interactions between people, place and technology (Foth 2006). Evaluation is not thought of as some distinct exercise, separate from the intervention itself. Instead, it is embedded in the intervention and constitutes an essential component of this intervention, a necessary step towards transformation. It can therefore be argued that the SIE framework is an evaluation tool of implementation, but most significantly, *for* implementation. It goes beyond Scriven's (1995) distinction between formative and

summative evaluation and suggests that, as an evaluation framework it can be used to form, shape, and finalise a model of intervention in dynamic environments. Much like Patton's (2011) complexity-sensitive developmental evaluation, it blurs the lines of innovation and adaptation by proposing an approach where planning, implementation and evaluation and transformation are intertwined and continuously unfold in successive sequences.

Due to their different nature, there were inevitable variations in the application of the framework to the case studies, depending notably on whether its application was limited to evaluation only, as in the case of the three third-party case studies, or whether it entailed primary and secondary interventions, i.e. implementation and evaluation, as in the case of the researcher-led intervention. While recognising that the SIE framework needs further testing and refining in primary and secondary interventions, I argue that its main principles can be developed in a heuristic, a model that can be applied to a diversity of operations, by ICT planners, commissioners or evaluators. It can complement existing evaluation approaches as a means to deepen their understanding of perspectives, power relationships (Hummelbrunner 2011) and of the impacts of ICT interventions on wellbeing.

The SIE framework does present, however, some limitations. The fact that the framework draws on several methods from Soft Systems Methodology, and on Critical Systems Heuristics, may open it up to challenges about the practicality of combining these methods. Brocklesby and Mingers (1997) have argued that techniques from SSM – such as Rich pictures and CATWOE - and CSH can be detached from their parent methodology and used in other contexts within other methodologies, to

express problem situations as experienced (1997:504). Following this argument, I claim that the approach used is not inherently contradictory. However, just as Kleine (2013)'s Choice Framework, which attempts to model complex relationships between agency, structure, degree of empowerment and development outcomes, the multiple theoretical and methodological influences of the SIE framework may lack in its ability to theorise each of its elements in depth.

Another uncertainty concerns its applicability to large-scale ICT interventions. Whereas the SIE framework was successfully used to systematically guide the evaluation of the third party-led case studies, including a national intervention, it was only fully tested on a small-scale and highly flexible researcher-led intervention. Certain steps, like engaging with perspectives would require more development and testing. Its full deployment on a large-scale ICT operation would require intense stakeholder engagement and, therefore, potentially significant resources. For this reason, I have argued that the SIE framework can be built on and enriched to respond to specific needs, and be adapted according to available resources. Following the principles of the SIE framework can also help increase the purposefulness of ICT interventions, and enhance their positive impacts on Indigenous wellbeing. It should be noted, however, that this is not a stand-alone framework and it is consequently not as detailed as some other evaluation frameworks, e.g. Kleine (2013), Gigler (2015). It emerges out of the pragmatic application of theory and methodology to the situation of interest (Goldkuhl 2012). It is done in full awareness that the challenges of evaluating real-world ICT interventions often limit the usefulness and effectiveness of complicated frameworks, unless one has access to plenty of resources to spend in the evaluation.

A third limitation concerns the focus of the SIE framework on power and emancipation, which may be a sensitive subject in certain settings, and which can make the life of the evaluator very difficult or, in extreme cases, dangerous. Taking a mild example to illustrate this point, from my own research intervention, the fact that I had to request a permit from government agencies and ministries for doing research on ICT4D, where they knew very well that many of the government's ICT projects were resounding failures may have played a role in the long delays for the procurement of my research permit, and in allowing me to begin the collection of data. This factor needs to be taken into account by evaluators.

## 8.4 Policy recommendations

*Research question #3: What recommendations might be made from this doctoral research to inform policy on ICT interventions for Indigenous wellbeing?*

Despite their differences, e.g. in scale and objectives, each one of the case studies brought important insights for the understanding of how ICT interventions may impact the wellbeing of Indigenous communities. In this context, what recommendations can be made to international development organisations, national policy-makers and civil society organisations from this research? How can its findings help inform better ways of deploying ICT interventions in Indigenous communities, and increase their chances of having a positive impact on Indigenous wellbeing?

1. A first recommendation is perhaps to reaffirm the need to balance supply-led, techno-centric approaches, with their emphases on efficiency, with ICT interventions using human-centred approaches, which extend the

evaluation of effectiveness and through it, wellbeing. Lessons from the case studies have confirmed that, while questions of access and use are indeed necessary conditions for the success of ICT interventions, they are not sufficient to increase the wellbeing of their beneficiaries. In other words, beyond the focus on the provision of ICT access, and the national and international objectives for reducing the digital divide, a key concern for ICT4D policies aiming to enhance Indigenous wellbeing should primarily be to address the aspirations of the intended beneficiaries, for example as identified in the community development plan, as in the case of Surama. This suggests also that ICT, as other technologies, are not miracle solutions for increasing wellbeing. In effect, ICT may only play a marginal role in attaining the wellbeing goals set by a community. The researcher-led intervention showed for instance that, while the community welcomed the digital storytelling project, it placed a higher value on the interactions it generated within the community than in the fact that the stories were stored and shared online.

2. Recognising that supporting an increase in ICT use in Indigenous communities may pose new risks as well as new opportunities for the practice and preservation of their traditional culture, ICT interventions in Indigenous communities should seek to harness the possibilities offered by digital technologies, and favour processes that reinforce Indigenous culture, identity and, ultimately, wellbeing. It should, however, do so in awareness that Indigenous culture and identities are differentiated, dynamic and changing, and resist the temptation of trying to essentialise them.

3. Policy-makers should recognise that a focus on a multidimensional and subjective criteria of success, such as wellbeing, necessitates the involvement of Indigenous communities in the purposeful activity leading to the transformation process. This includes the community's ability to intervene in the planning, implementation and evaluation process of the intervention. This is not only important to increase the success of ICT interventions, it is also an essential condition to the legitimacy of such interventions, and a fundamental right of Indigenous peoples, e.g. as recognised by the United Nations Declaration on the rights of Indigenous Peoples, and as confirmed by the case studies evaluated in this research.
4. Policy-makers should strive to ensure that the intervention benefits the community as a whole, rather than certain groups or individuals already in privileged positions. As evidenced in the case studies, ICT interventions can exacerbate existing power relationships and increase inequalities in a community. While this is challenging to do in practice, the use of critical approaches may help evidence entrenched inequalities that ICT interventions may help aggravate.
5. Policy-makers should recognise the complex and multiple ways evaluation can interact with policy (Gluckman 2011), as well as with the design and implementation of an intervention (Nunns 2009). I have argued that moving from a technocratic approach to a model closer to co-production where relationships between stakeholders are negotiated, and design, implementation and evaluation occur iteratively might help reduce uncertainties and increase the intervention's effectiveness.

# Chapter 9. Conclusion

## 9.1 Introduction

The central aim of this doctoral thesis was to explore the interplay and enhance the understanding of the relationship between ICT interventions and Indigenous wellbeing. Whereas there appears to be a certain support for a role for ICT interventions to enhance the wellbeing of Indigenous communities, the scope and implementation of such interventions, as well as the means for evaluating their success are still a matter of discussion amongst both researchers and practitioners associated with the design, implementation and evaluation of ICT interventions.

## 9.2 Structure and Main Empirical Findings

In Chapter 2, I have introduced the rich and diverse field of ICT4D, with roots in information systems and the wide influence of technology diffusion and adoption theories. I then explored the concept of wellbeing and the predominant approaches informing wellbeing research and policy, including universal (objective lists) and utilitarian (desire/preference satisfaction and subjective wellbeing) theories. I have shown how the field has changed along with the evolution of the discourses on development and wellbeing, through a theoretical diversification, which has seen the emergence of multidimensional impact studies. Looking at two ICT4D evaluation frameworks that have built on Amartya Sen's capability approach, I have pointed to their strengths and possible limitations in appreciating multiple perspectives and the risks of power imbalances in ICT4D interventions. I have then focused on the potential contribution of critical systems thinking, pragmatism and action research

for addressing these limitations and for further expanding the field of ICT4D evaluation.

In Chapter 3, I have presented the theoretical and methodological frameworks underpinning this research, building on critical systems thinking and pragmatism. I have introduced the criteria for the selection of four case studies and the methods and techniques that I have used to collect and analyse the data. Importantly, I have also outlined and elaborated on the key principles that should inform a systemic implementation and evaluation framework ICT4D intervention.

In Chapter 4, I applied these principles to the evaluation of the OLPF intervention. I noted the lack of efficacy and efficiency of the intervention; the laptops were not distributed due to gross mismanagement and the quantity and quality of the training were insufficient to increase technology awareness, knowledge and skills, let alone to support community and economic development. I have argued that, whatever the deeper political reasons behind the failure of the OLPF, the intervention failed to improve the life of Amerindian communities and likely affected it negatively, as it diverted public money away from supporting projects that would have mattered to them. I have concluded by noting that the intervention appeared to be aimed at ensuring that the PPP/C increased its support base in Amerindian territories, through a paternalistic system of patronage aimed at winning the loyalty of Amerindian voters. However, the fact that the PPP/C lost the May 2015 elections suggests that this strategy may in fact have contributed to exactly the opposite effect the PPP/C politicians were aiming to achieve as a result of the failure of the OLPF initiative.



Chapter 5 focused on evaluating the Surama intervention. The evidence gathered in this inquiry showed that, despite clear efficiency issues, the community of Surama succeeded in harnessing the satellite-based internet service to support the activities of the ecolodge. The income generated at the ecolodge contributed to make Surama one of the wealthiest communities of the North Rupununi and to provide employment and training opportunities to villagers. In addition, the intervention appeared to be associated with increased political and economic freedom in the community. But these successes had also come with a certain social cost, raising inequality and dividing the community between those who had access and those who didn't as well as between those who had the skills and those who didn't. In other words, although the internet service appeared to be providing a wide array of services to the community, only a small percentage of individual community members really had the possibility to directly use it personally. Several barriers prevented the rest of the community from using it, among which were the location of the satellite dish, away from the community centre, its operational framework and, perhaps more importantly, its price and the timing at which it could be accessed.

In Chapter 6, I have evaluated the satellite-based internet service in Yupukari, showing that it had several impacts on the community. It contributed to the development of new information and communication patterns in the community and helped Caiman House attract researchers, tourists and students and created jobs. Crucially, it also improved literacy and increased the number of pupils that were able to attend secondary school. In that sense, the intervention was empowering for many individuals. At the collective level, however, the situation was more nuanced. Ten years after the launch of the intervention, the community appeared to hesitate

between various models for the library internet access. One source of conflict concerned the social rules surrounding the use of the library premises, with on-going power struggles looming between the librarians, the Caiman House staff, teachers and the Village Council. Another aspect concerned the model of intervention, and the tensions that existed between, on one hand, the commitment of Caiman House to provide open access to ICT in the library and, on the other hand, the reality of an organisation trying to survive and thrive by keeping a balanced budget. The case of Yupukari illustrated how socially embedded ICT is, and the responsibility that falls on stakeholders to determine the aims and rules surrounding ICT interventions in order to ensure that they have a positive impact on wellbeing.

In Chapter 7, I have analysed the researcher-led intervention: the Pantanî Blog. This gave me an opportunity to apply, and further develop the evaluation framework by collaboratively designing and implementing an ICT intervention. The combination of traditional storytelling with modern recording tools was generally well received. So was the idea of producing local content and uploading it on internet. However, the final evaluation suggested that the impact on wellbeing would have been greater if the intervention had used a mixed-mode communication strategy from the outset, including radio, print and online publication. The challenges encountered in implementing the intervention opened my eyes to the difficulty of carrying out participatory interventions, in particular when done over a long distance. It highlighted the importance of adopting a pragmatic approach, and the value of a flexible implementation framework when intervening in complex situations, in order to cope with unforeseen circumstances. On-going monitoring and evaluation allowed the intervention's participants to adapt to the multiple challenges that were

encountered throughout the intervention, from access-related challenges and communication issues, to the more fundamental questions of control and sustainability. The intervention contributed to increase the participants' content capabilities and to generate an online portal of traditional Amerindian stories. But the approach also empowered the participants to take initiatives to increase community engagement, such as the radio programme and the school competition, and bridge across generations. In other words, it allowed the participants to turn what was essentially a small researcher-led intervention into a participant-led community engagement aimed at increasing wellbeing.

In Chapter 8, I have discussed the results of the case studies in light of each of the three research questions. I have noted the importance of understanding the context in which ICT interventions take place, and the need to actively involve Indigenous communities in the design, implementation and evaluation processes of such interventions in order to maximise their positive impact on wellbeing. I have also shown that these impacts are multidimensional and therefore require adaptive mechanisms in order to adjust the intervention's goals over time. The Systemic Implementation and Evaluation framework was then introduced as a way to enrich existing input-output frameworks into a complexity-sensitive evaluation framework, before reflecting on the application of this framework to the case studies and on its implications for research and practice. The chapter has concluded with a set of recommendations for policy makers.

### 9.3 Contribution to Knowledge

Echoing one of the arguments made in the introductory chapter, the analysis of the case studies has confirmed the idea that ICT is not, by essence, good or bad for Indigenous peoples. This argument supposes that Indigenous identities and cultures are fixed and isolated, whereas it has been shown that they are dynamic and relational. To paraphrase de la Cadena and Starn (2007), indigeneity is *a matter of becoming* rather than a fixed state of being. This confirms that what matters in determining how and why ICT affects indigenous wellbeing lies in the rationale behind the intervention and the process of implementation. It also suggests that it is these aspects that should be the focus of researchers and practitioners. Having analysed each of the case studies in Chapters 4-7, and discussed them in Chapter 8, this section proposes a short answer to each one of the main research questions, before outlining the contribution to knowledge made by this thesis.

1. In the context of the North Rupununi, Guyana, how do selected national and local ICT interventions affect Indigenous communities' wellbeing?

In answering the first research question, I have argued that there is no clear-cut separation between the positive and negative impacts of ICT interventions on Indigenous wellbeing, and that such intervention often leads to a combination of both types of impact. In addition, I have also shown that ICT interventions can generate new needs or accelerate existing changes within communities, affecting people's preferences and aspirations. It results from this that the social context in which the intervention takes place, as well as the mechanisms that regulate ICT access and use within the community play a crucial role in determining the impact of ICT

interventions within Indigenous communities. I therefore argue that the value of ICT interventions lies primarily in whether they are introduced to address locally-defined needs, and whether Indigenous beneficiaries are involved in the design, implementation and evaluation of such interventions, i.e. through participation. This is not an easy or straightforward process as participatory ICT4D interventions can hide existing power relationships, as well as accentuate inequalities between groups within Indigenous communities. Findings from the four case studies however suggest that, although participatory ICT interventions are challenging to apply in practice, they remain a fundamental necessity for Indigenous communities. Interventions that are led by a community, whose control over access and use is therefore high, are more successful and legitimate than interventions that are planned, designed and implemented from outside Indigenous communities, without involving them.

## 2. What is the role of evaluation in ICT interventions, and how might it be enhanced in order to directly address Indigenous wellbeing?

This research has shown that ICT interventions have the potential to impact wellbeing in a wide range of different ways. In fact, these impacts are often challenging, if not impossible to predict at the design stage of the intervention. My experience with the evaluation of the four case studies has suggested that questions that focus on efficiency/efficacy, i.e. infrastructure, access and use, are indeed central to the success of ICT interventions and that any intervention focused on increasing wellbeing must take these aspects into consideration. Building on Flood and Romm's (1996) triple loop learning tool, I argue that ensuring efficiency in access and building skills are essential conditions for *doing things better*, but the process cannot stop

there. Achieving efficient ICT interventions is only a stepping-stone for reaching higher order, systemic objectives, and moving further down the ICT Value Chain (Heeks 2010), i.e. towards ensuring that they positively impact wellbeing. Drawing on Habermas and the tradition of critical systems thinking, I have argued that the actual contribution of ICT interventions to Indigenous wellbeing should look beyond efficiency and optimisation (Giampietro 2001), and look at *doing better things*, that is, to interrogate the wider outcomes and impacts of ICT interventions and, possibly, to challenge their goals. However, in evaluating the four case studies, I have noted that there are tensions between the systematic aim of *doing things better*, as symbolised by measures of efficacy and efficiency, and higher level, systemic aims of *doing better things*. I have argued that while questions that focus on ICT infrastructure, access and use are important for the success of interventions, issues of participation, power, purpose and values all play a role in determining whether such interventions might enhance or undermine Indigenous wellbeing. I have therefore concluded that ICT4D interventions might enhance wellbeing if they combine a focus on efficacy, efficiency and effectiveness in order to *do better things better*.

The Systemic Implementation and Evaluation (SIE) framework proposed in the second part of the discussion proposes a set of principles that can be combined with existing evaluation frameworks to help policy-makers, practitioners and evaluators achieve this necessary balance between efficacy, efficiency and effectiveness. The application of the SIE framework to the researcher-led intervention has demonstrated that interventions are more successful when they are constantly adapting to local realities, and responding to the evolution of demand. It results in a more organic intervention process that is much more in tune with the reality of the

local context. I have argued that such an approach can in turn help increase the purposefulness of ICT4D interventions and enhance their impact on Indigenous wellbeing.

3. What recommendations might be made from this doctoral research to inform policy on ICT interventions for Indigenous wellbeing?

In answering the last research question, I have used the insights of the case studies to propose a series of recommendations for policy-makers on how to engage with Indigenous communities, and to use ICT interventions to increase their wellbeing. I have reiterated that a precondition for ICT interventions to increase wellbeing is to ensure that they address the aspirations of their intended beneficiaries. While this recommendation applies to all beneficiaries, I have demonstrated that such interventions could address issues, which are specific to the oral tradition of Indigenous communities, that is the growing disappearance of their traditional culture. Furthermore, I have argued that the participation of Indigenous beneficiaries in the design, implementation and evaluation of the intervention is equally important, but that this engagement should be made in light of existing power relationships and entrenched inequalities.

Having analysed ICT interventions through four different case studies in Guyana, and involving several stakeholders, I have shown that these interventions have the potential to impact Indigenous wellbeing in a variety of ways, and that these impacts can be both positive and negative given the complexity of the environments in which they operate. The rigidity of objective list theories with their conditions of universalisability, which often dominate development evaluations, and their attempt

at making definitive judgments about a state of being that is largely subjective in nature renders all kind of objective judgment on the impact of ICT interventions on Indigenous wellbeing precarious at best. Yet, the more subjective alternative approaches are not without flaws either. The tendency of both utilitarian and capability approaches to reduce wellbeing to the subjectivity of individuals also fails to provide adequate recognition of the collective aspects of human wellbeing, particularly in Indigenous communities. As part of my contribution to this debate, my research has shown that increasing the impact of ICT interventions on Indigenous wellbeing requires moving away from the discussion that opposes objective vs subjective, individual vs collective perspectives on wellbeing that characterises many technocratic and academic approaches in the field of ICT4D. It suggests moving towards a model closer to co-production between intervention owners and beneficiary communities, where relationships between stakeholders are negotiated, and intervention design, implementation and evaluation are deployed iteratively, in order to help reduce uncertainties, increase effectiveness and, ultimately, their positive impacts on Indigenous wellbeing.

## **9.4 Future Research**

For future research, I would like to recommend the following as potential avenues for academics and practitioners:

- To further improve the Systemic Implementation and Evaluation (SIE) framework in order to support ICT4D interventions at multiple scales, e.g. at the international, national and local level, which will maximise wellbeing



impacts within Indigenous communities;

- To explore how the SIE framework can be practically combined with existing ICT impact assessment frameworks, such as the Choice Framework (Kleine 2013), or the ICT Impact Chain (Gigler 2015), in order to develop an improved implementation and evaluation framework that builds on the strengths of each model.
- To produce a brief manual on its deployment and encourage any initiative that uses ICT in the North Rupununi and beyond, to apply, test and feedback on the framework's use in practice.

In a paper discussing Amartya Sen's philosophy, Evans (2002) has written the following words, which, I believe, illustrate brilliantly the dilemma that every ICT4D practitioner might be faced with:

*"If we should be worried that "the elite guardians of tradition" might subvert people's ability to "choose the lives they have reason to value," we should be even more worried about the power of the "empires of Coca-Cola and MTV" to do the same thing" (Evans 2002:59).*

The use of information and communication technologies may very well represent a key to social change, empowering marginalised people and communities to challenge established orders and strive towards emancipation and wellbeing. But these technologies may also contribute to reinforcing inequalities or handing power over from the local level to the hands of corporations like Coca-Cola or MTV. Drawing on the literature and case study results, I have argued that many ICT4D interventions fail to recognise that they serve particular interests. If ICT4D interventions are to help

enhance the wellbeing of Indigenous communities, they should ensure that they work for their beneficiaries, with their beneficiaries, and according to the needs and priorities of these beneficiaries. Only then, will they have a chance to truly improve wellbeing.

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# Appendices

## Appendix 1: List of Interview Respondents

Int. N°	Date	Place	Means	Roles and/or Sector	Level of most activities
I1	13/02/14	Bina Hill	Face-to-face	Local Researcher, non-governmental organisation	Regional, local
I2	17/02/14	Bina Hill	Face-to-face	Project Manager, non-governmental organisation	Regional, local
I3	18/02/14	Bina Hill	Face-to-face	Community Toshao / Secretary, Treasurer, non-governmental organisation	Regional, local
I4	19/02/14	Kwatamang	Face-to-face	Community Outreach Manager, non-governmental organisation	Regional
I5	19/02/14	Bina Hill	Face-to-face	Teacher/Principal	Local
I6	19/02/14	Bina Hill	Face-to-face	Chief Executive Officer, non-governmental organisation	Regional
I7	20/02/14	Bina Hill	Face-to-face	Data Analyst, non-governmental organisation	Regional
I8	04/03/14	Bina Hill	Face-to-face	Project Manager, non-governmental organisation	Regional
I9	05/03/14	Bina Hill	Face-to-face	Programme Director and Secretary, non-governmental organisation	Regional
I10	10/03/14	Georgetown	Face-to-face	Teacher, Computer Science / Activist	National
I11	11/03/14	Georgetown	Face-to-face	Special Advisor, Office of the President	National
I12	12/03/14	Georgetown	Face-to-face	Head of Department, University of Guyana	National
I13	12/03/14	Georgetown	Face-to-face	Various interviews, Telecommunications Companies	National
I14	12/03/14	Georgetown	Skype	Assistant Professor, University	International, national



I15	13/03/14	Georgetown	Face-to-face	Information and Communication Officer, UNDP	International, national
I16	13/03/14	Georgetown	Face-to-face	Retired UNESCO employee	International, national
I17	25/03/14	Surama	Face-to-face	Finance Manager/Housewife, Local tourism company	Local
I18	26/03/14	Surama	Face-to-face	Tour Guide, Local tourism company	Local
I19	26/03/14	Surama	Face-to-face	Village Councillor / Secretary	Local
I20	05/04/14	Georgetown	Skype	Teacher / Development Professional	International, national
I21	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I22	15/04/14	Yupukari	Face-to-face	Librarian	Local
I23	15/04/14	Yupukari	Face-to-face	Vice-Toshao	Local
I24	15/04/14	Yupukari	Face-to-face	Community Support Officer	Local
I25	16/04/14	Yupukari	Face-to-face	Tourism professional / Board Member, Caiman House	Local
I26	16/04/14	Yupukari	Face-to-face	Assistant Project Manager, Caiman House	Local
I27	17/04/14	Yupukari	Face-to-face	IT Expert	Local
I28	18/04/14	Yupukari	Face-to-face	Village Councillor / Board Member, Caiman House	Local
I29	22/05/14	Surama	Face-to-face	Accountant, Local tourism company	Local
I30	22/05/14	Surama	Face-to-face	Field Manager, Local tourism company	Local
I31	23/05/14	Surama	Face-to-face	Manager, Local tourism company	Local
I32	23/05/14	Surama	Face-to-face	Senior Councillor	Local
I33	03/06/14	Georgetown	Face-to-face	Project Officer, non-governmental organisation	National
I34	04/05/14	Georgetown	Face-to-face	Member of Parliament (opposition)	National
I35	10/07/14	London	Skype	CEO, Telecommunications company	International, national

## **Appendix 2: Letter of Consent for Interview Respondents**

**Date:** February 2014 to June 2014

**Study Name:** Study on the role and impact of information and communication technologies (ICT) on the opportunities for Amerindian populations in the North Rupununi, Guyana

**Principle Researcher:**

This field study is being carried out principally by Mr. Géraud de Ville (a Doctoral Candidate in the Engineering and Innovation Department at the Open University) with official permission from: Village Leaders, North Rupununi District Development Board, Ministry of Amerindian Affairs (pending) and the Environmental Protection Agency (pending) of Guyana. I can be contacted by email at geraud.de-ville@open.ac.uk.

**Purpose of the Research:**

This research study examines the role and impact of information and communication technologies (ICT) and related policies on the development and opportunities of Makushi communities in the North Rupununi, Guyana.

**Research Objectives:**

1. To assess users' current experience with ICT
2. To analyse the impact of ICT on social networks
3. To achieve a systemic analysis of ICT policy and implementation
4. To understand how digital tools can help local communities tell their own stories

**What You Will Be Asked to Do in the Research:**

Participants will be requested to collaborate with the principal researcher in terms of planning, design, data collection and interpretation, and feedback/evaluation. Participants will be requested to engage in one or more of the following research activities:

- 1) Community meetings
- 2) In-depth interviews
- 3) Workshops on digital storytelling
- 4) The digital recording of oral history narratives
- 5) Participant observation. Participants will be consulted beforehand to discuss the time frame of the activity and when is most convenient for both participants and researcher.

**Risks and Discomforts:**

The researcher does not foresee any risks or discomfort from your participation in the research. You have the right to not answer any questions. Concern for the individual rights, safety and wellbeing of the participants supersede all concerns for the research study.

**Voluntary Participation:**

Your participation in this study is completely voluntary.

**Withdrawal from the Study:**

You can stop participating in the study at any time, for any reason. Your decision to not participate or to withdraw from the study will not influence the nature of your relationship with the researcher now or in the future. Should you withdraw from the study; all data you have provided associated with the project will immediately be destroyed where possible.

**Benefits of the Research and Benefits to You:**

The benefits of participation in this study include: the opportunity to dialogue with the researcher, express your own views, and to gain shared understanding on the issue under investigation.

Further, some participants will have an opportunity to take part to one or several workshops on digital storytelling and use digital tablets to create sharable stories about their community.

**Confidentiality:**

Confidentiality and anonymity of research participants will be respected throughout the research process to the fullest extent possible. All information supplied by you the participant during the research will be held in confidence and unless you specifically indicate your consent, your name will not appear in any report or publication of the research. However, if you **do not** want to remain anonymous (unknown), you must sign the consent form and indicate that you want to reveal your true identity. All field notes and transcripts will:

- Use an interview number as opposed to a name for classification purposes
- Use a pseudonym (a false name) to protect your identity
- Alter any additional information that might reveal your identity

Research data will be collected in the form of digital voice recordings, video, field notes, and interview transcripts. While in the field, all data collected will be kept in a safe place that is only accessible to the principle researcher. Primary data will be archived (stored) with NRDDDB at the Bina Hill Institute. Video recordings maybe used to create a video to return information back to the communities. Since the video will display verbal or graphic personal identifiers, I will only include your voice or image recording if you indicate your consent. All other records will be destroyed after my research is completed.

**Compensation for Participation**

Participants do not stand to gain direct financial compensation, royalties, capital equipment etc. from this research as it is strictly intended for academic purposes and not for commercial purposes or gain. However, for key research collaborators will receive a stipend and travel, meals and accommodation will be provided for participants who may travel far from their villages to take part in research activities.

**Questions about the Research**

If you have any questions about the research project and/or research activity (ies) in which you are asked to participate, please do not hesitate to ask the principle researcher, Mr. Geraud de Ville. The ethics for this research has been reviewed and approved by the Open University Human Research Ethics Committee. If you have any questions about this process or about your rights as a participant in the study, please contact: [Research-Ethics@open.ac.uk](mailto:Research-Ethics@open.ac.uk)

### **Legal Rights and Signatures:**

**Name of study:** Study on the role and impact of information and communication technologies (ICT) on the opportunities for Amerindian populations in the North Rupununi, Guyana.

**Researcher:** Geraud de Ville

### **Please indicate**

I have read/was read the information sheet about this study	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I have had the opportunity to ask questions	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I have received satisfactory answers to any questions	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I understand that I am free to withdraw from the study at any time, without giving a reason	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I understand that I may refuse to answer any question without giving a reason.	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I understand that my participation in this study will be recorded using digital voice recorder	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]
I agree to participate in this study	YES [ <input type="checkbox"/> ]	NO [ <input type="checkbox"/> ]

Signed: .....

Name: .....

Date: .....

**NB: This Consent form will be stored separately from the responses you provide.**

## Appendix 3: Survey Template

**Study name:** Study on the role and impact of information and communication technologies (ICT) on the opportunities for Amerindian populations in the North Rupununi, Guyana

**Principal researcher:** Géraud de Ville – PhD Researcher – Open University, UK

**NOTE:** By handing over the completed questionnaire to the Principal researcher, I agree that my answers be used for the purpose of research

### QUESTIONS

Age.....

Sex (M – F)

Occupation: .....

Community: .....

Do you have a telephone? (Yes – No)

What year did you get your first telephone?

What is the brand of your telephone?

Approximately how much per month do you spend on telephone credit?

Less than 500 GYD (USD 2.5)	500-1500 GYD (USD 2.5-7.5)	1500-2500 GYD (USD 7.5-12.5)	2500-3500 GYD (USD 12.5-17.5)	More than 3500 GYD (USD 17.5)
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Do you have an internet subscription on your phone? (Yes – No)

How often do you check your phone?

More than 1x per hour	1x per hour	1-5 times a day	Less than 1x a day	Rarely
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Do you have an email address? (Yes – No)

From 1 (most often) to 5 (least often), please indicate what you mainly use internet for

Leisure (Music, video)	Communication (Skype, BBM, Facebook chat)	Information (News, research)	Work	Social media (Facebook)
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How often do you use Makushi words in you internet or phone communications?

Very often (every time)	Often	Sometimes	Rarely	Never
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Do you have a Facebook account? (Yes – No)

How often do you connect to Facebook?

More than 1x per day	1x per day	More than 1x per week	1x per week	Less than 1x per week
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Do you use social media? I yes which ones?

Please rate the issues below with telephone and internet by importance

	Major issue	Issue	Not really an issue but might become one	Not an issue and will probably not become one
Cost (credit, subscription)				
Harassment, bullying				
Distraction (from family, school or work)				
Lack of privacy				
Difficulty of use				
Government surveillance				
Hacking (email account)				
Impact on Amerindian culture				
Coverage (signal too weak)				
Energy (Charging device)				
Other				

Comments

When you are finished completing this questionnaire, please hand it over to the Principal researcher.

Thank you!

## **Appendix 4: Handhelds for Sustainability Proposal**

**Supporting environmental management through the use of handheld technologies: training indigenous participants from five North Rupununi communities, Guyana, South America.**

**February – July 2014 - Géraud de Ville**

### **Summary**

Géraud De Ville is an Open University 2<sup>nd</sup> year PhD student who's research aims to analyse information and communication technologies (ICT) policy in Guyana in order to understand whether or not it is raising opportunities for local Indigenous communities and the sustainable management of their territories.

This project will allow Géraud to move from the passive observation of the impacts of ICT policy, towards actively engaging Indigenous participants in using accessible ICT tools - handheld tablets - to support the sustainable management of their territories.

### **Context**

Amerindian communities of the North Rupununi, Guyana, have a long history of environmental management. Thanks to a sound balance between their needs and those of their surrounding ecosystems, they have managed to keep their forests standing and their rivers clear and bountiful. These Indigenous lands provide a sanctuary for biodiversity, where traditional forms of land management have enhanced the conservation of ecosystems for thousands of years. However, in recent years, Indigenous communities have been challenged with a range of external threats,



including illegal logging and gold mining, over harvesting of fish and other wildlife (to be sold for consumption or the wildlife trade), large infrastructure projects (dams and roads) and the expansion of the mechanised/industrial agriculture frontier.

The training will aim at improving participant's command of ICT and exploring situations where these technologies can be part of the response to the new challenges Indigenous communities are facing. It will build on the highly successful bottom-up and participatory capacity building approach currently being implemented in a range of Indigenous communities throughout the Amazon within Project COBRA (<http://projectcobra.org/>). Géraud has been part of this project since its inception and is coordinating the project's communication and dissemination activities.

### **Environmental management and ICT**

Whether they are formulated in terms of economic, social, environmental or political opportunities, it is a fact that new ICT generate many hopes and are often presented by policy-makers as quasi-magical tools to leapfrog development. However, development is a messy and evolving process which often proves challenging to one-size-fits-all solutions and requires sustained efforts at the local level. In order to evaluate the impact of ICT, the dynamics behind the decisions, finances, installation and use of ICT need to be fully understood.

Increasingly, Amerindian communities are also encouraged to jump on the ICT bandwagon and integrate modern approaches to environmental management, with varying degrees of success. It is argued that the success of these approaches depends on being able to blend accessible ICT tools with traditional ecological knowledge and

the aspirations of Indigenous communities themselves, rather than imposing a foreign, expert led approach to environmental management onto communities.

As part of Géraud's wider research objectives, the training delivered in this particular project will develop a pioneering approach to environmental management – combining accessible handheld technologies with traditional Indigenous ecological knowledge. As the costs of portable technologies come down, and the modes of interaction become increasingly visual, these tools are becoming directly accessible to Indigenous communities in control of landscape management within their territories.

Using ICT require a certain level of literacy, and some members in local communities may not have the confidence to engage with these technologies. With additional funding support, Géraud will be able to organise a series of training workshops in the communities on the use of internet and social media to improve participants' command of ICT. The case studies and activities carried out during the training will have a specific focus on environmental management. The workshops will occur once a month over a period of six months. Participants will be able to practice what they have learnt during the workshops within their own communities, and the results will be reviewed as part of the training.

The visual emphasis on community engagement will allow the creation of an accessible and visual dissemination programme for extensive dissemination of the bottom-up approach promoted within the training.

## **Training**

The training will engage Indigenous participants to reflect on emerging sustainability

issues on their territories through the use of ICT. Multimedia evidence of healthy, sustainable practice, when created and shared by communities themselves, can transform perceptions of what can be potentially achieved, which may in turn, change communities' values, attitudes, and day-to-day practices toward more healthy, sustainable and resilient livelihoods.

The aim is to build capacity for using handheld devices to capture and share, through visual communications, environmental problems and associated community-owned solutions; and enable Indigenous communities to use accessible handheld technologies to constructively work through sustainability emergencies.

There will be six workshops, which will take place from February to July 2014.

Participant will be proposed by communities from each of the five communities that have already approved Géraud's research plans. Each training event will consist of an introductory 2-days workshop, followed by a month of community-based implementation. As part of his Ph.D. research, Géraud will be living with these communities, and will therefore be able to follow and support the participants' progress. A wrap up 2-days workshop and celebration will take place in the final month, with invitations to key decision makers from each of the five communities (community leaders; youth and women's groups).

The topics covered will include:

- Handheld functionalities - What are the basic commands – How to capture and edit video and photos about environmental threats and community solutions
- Social media – Typology of social media – Use of social media for

environmental management – How can environmental threats and community solutions be shared with the whole community?

- Social media and security/privacy concerns – Building a secure exchange of information using social media – making sure that key knowledge about community natural resources does not fall into the wrong hands.
- Community-based environmental management – recording and sharing traditional ecological knowledge; ethnographic and ecological mapping; environmental indicators and thresholds; community-based environmental management plans.

## Outcomes

- Five Indigenous community members trained in handheld ICT technologies and community-based environmental management;
- Audio-visual assets identifying environmental threats and community solutions within five communities;
- Social network established for sharing environmental threats and community solutions;
- The development of a training programme on ICT technologies and environmental management for Indigenous communities, with the potential for engaging further communities in the North Rupununi and throughout the Amazon.

## Budget

Description:	Amount
--------------	--------

6 x 2-days Workshops (food, room hire, transportation of participants)	£1,200
Indigenous workshop assistant	£300
Small stipend for supporting participants <sup>25</sup> (£50 per participant per month)	£1,500
5 Tablets (Samsung Galaxy Tab 3)	£1,000
Printing of training materials, costs of internet connection	£300
Transportation	£780,70
Total	£ 5.080,70

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<sup>25</sup> as Indigenous communities depend on a subsistence lifestyle, any diversion from their day-to-day subsistence practices could have serious impact on the participants and their families. It is therefore good practice to support participation with a small stipend so as to enable participants to not worry about how they will be able to meet their needs during the training and community research period.

## Appendix 5: Researcher-Led Intervention Expenditures

### Researcher-led intervention expenditures (July 2016)

Item	Quantity	Price per unit (GBP)	Total cost (GBP)
Domain and hosting (Godaddy)	3	89 per annum	267.00
Samsung Galaxy 8 digital tablet	4	250.00	1000.00
Samsung 32GB memory card	4	18.74	74.96
Otterbox protective case for tablet	4	38.48	153.92
Stipend Bloggers	36	11.4 per story	410.40
Supplement Local Coordinator	27	3.80 per story (excl. own stories)	102.60
Pantanî Book	1	1,300.00	1,300.00
Other expenses (meetings, communication, team lunch,...)	1	150.00	150.00
		Total	3,458.88

## Appendix 6: Researcher-Led Intervention Terms of Reference



### Indigenous Digital Storytelling Project

## Agreement

This agreement is signed between Mr Géraud de Ville, PhD researcher at the Open University, UK, hereafter referred to as the “Manager”, and

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hereafter referred to as “the Blogger”.

Mr [Name] will be the local Coordinator for this project. He is hereafter referred to as the “Coordinator”.

#### Article 1: Object of this Agreement

This agreement regulates the participation of the Blogger to the Pantanî blogging project to take place between 1 June and 30 November 2014.

#### Article 2: Obligations

##### Obligations of the Blogger

Under the terms of this agreement, the Blogger agrees to regularly author (write, capture, edit) and upload post, ie. at least once a week, on the Project page and follow up users' comments and questions with the aim of building an online community.

This means that the blogger will ensure to have access to internet at least once a week and shall be available to respond to any questions or suggestions from the Manager or the Coordinator in the shortest delays.

The object of these stories shall focus around land uses, land rights, wildlife, sustainability or natural resources management, language and culture, traditional beliefs. News and events can also be covered.

The blogger is encouraged to experiment various techniques, including writing, drawing, photography, video and audio interviews to improve his/her skills.

### **Obligations of the Manager and Coordinator**

Throughout the project, the Manager and the Coordinator will actively support the Blogger by:

- Designing and developing the Pantanî Facebook page
- Building a community around Pantanî using social media
- Contributing ideas and assisting with proofreading upon request.

### **Article 3: Equipment**

For the purpose of this project, the Blogger is entitled to a Samsung Galaxy Note 8 tablet (including an "Otterbox" rugged protective case and a charging cable).



This tablet is the property of the Open University, UK and will remain so throughout the agreement and shall be returned to the Project Coordinator upon anticipated termination in the shortest delays.

#### **Article 4: Free, Prior and Informed Consent**

If the activities of the blogger involve the participation of community members, e.g. interviewing or quoting people, the blogger will ensure that free, prior and informed consent is obtained by the community and individuals involved.

The Manager shall not be held responsible if the blogger does not respect this clause.

#### **Article 5: Probation period**

There will be an initial probationary period of one month. During the probationary period either party may in the exercise of their absolute discretion terminate the collaboration by the provision of one week's written notice.

#### **Article 6: Notice of termination**

Subject to successful completion of the probationary period, the collaboration may be terminated by either party providing the other not less than two weeks notice.

In such a case, the tablet needs to be returned to the Coordinator as soon as possible and maximum 2 weeks upon termination.

#### **Article 7: Duration**

The project will last six months and will take place from 1 June to 30 November 2014.

### **Article 8: Benefits**

The blogger will be entitled to a payment of GYD 3000 (USD 15) per story published on the blog for a maximum amount of GYD 12.000 (USD 60) per month. Each story will need to be validated by the Coordinator or the Manager prior to publishing.

In addition, upon successful completion of the project, the Blogger will be entitled to keep the tablet.

Made in two copies on 30 May 2014 in Bina Hill, North Rupununi, Guyana.

The Manager

The Blogger

## Appendix 7: Addendum to the Terms of Reference



Indigenous Digital Storytelling Project

Amendment

This document is an amendment to the agreement for an Indigenous Digital Storytelling Project, hereafter referred to as the “Pantanî Blog” signed on 30 May 2014 between Mr. Géraud de Ville, PhD researcher at the Open University, UK, hereafter referred to as the “Editor” and

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hereafter referred to as “the Blogger” or “the participant”.

### **Art. 1: Object of this project: Participatory Action Research**

Given the encouraging beginnings of the Pantanî Blog, the Editor proposes to integrate this project to a PhD research on the *role and impact of Information and*

*Communication Technologies (ICT) on the opportunities for Amerindian Communities in the North Rupununi* by using a Participatory Action Research (PAR) Approach. This approach can be defined as a “collaborative research, education and action used to gather information to use for change on social or environmental issues” (Pain, Whitman, & Milledge, 2011:2). Concretely, this means that each Blogger is encouraged to take participate actively to the design of the project, collaborate throughout and ultimately define how he/she wishes it to benefit to them and their community, within the limits of the available funding.

The Blogger hereby voluntarily consents to the collection of data by the Editor data for the purpose of research, including but not limited to, blog posts’ content, digital conversations, phone, Skype meetings as well as physical workshops, using video and or audio equipment or any other equipment as deemed necessary.

## **Art. 2: Ethical Guidelines**

All research is conducted in line with the Open University’s ethical research policy.

The Editor hereby confirms that he is committed to open access research, and thereby consents to share and report all his findings with the Bloggers in a timely and constructive manner, to build their knowledge in the spirit of PAR and its emphasis towards social change. He will hold all the data collected at the disposal of the participants.

If this study takes the Editor to deal with sensitive data, special attention will be deployed to ensure that no harm is incurred by any of the participants, in particular with “long-lasting consequences” (Feinberg, 1984:45-51). To this end, potential harm

will be anticipated as much as possible and judged against the local context. To ensure data protection and privacy, any personal data will not be identified by their real names but by participant codes numbers and pseudonyms.

### **Art. 3: Duration & Frequency**

The participants hereby agree to an extension of the project until 30 June 2015. The participants are required to produce one story per month.

### **Art. 4: Evaluations**

There will be evaluations throughout the project, where the participants will be required to travel to Bina Hill. At each evaluation, participants will be asked to provide feedback on their experience and propose adaptations to the design of the project. The calendar of evaluations is as follows:

- November 2014
- January 2015
- March 2015
- June 2015

### **Art. 5: Benefits & Expenses**

The financial benefits of this project to the participants remain unchanged (GYD 3000 – or USD 15 - per story published on the blog).

If participants incur expenses for the purpose of the project, e.g. transportation and food costs for the evaluation meetings, communication costs, they may claim reimbursement for these expenses to the Editor. Importantly, expenses will only be

compensated upon presentation of receipts.

All remainder money will be invested towards furthering the impact of the project, e.g. to cover printing costs. The decision on the final allocation of costs will be made collaboratively during the fore last evaluation meeting, after a presentation by the Editor of a complete financial report.

Made in two copies on 30 May 2014 in Bina Hill, North Rupununi, Guyana.

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Project Coordinator

Blogger

For the Editor

## Appendix 8: Launch meeting Agenda (Pantanî Blog)

A launch meeting was held on the 30<sup>th</sup> of May in Bina Hill, Annai, and was attended by three of the four participants and myself, *Blogger 4* having joined the project a few days after it started. The meeting lasted for approximately 120 minutes and included several different activities and discussions around the concept of digital storytelling and some of its main techniques:

- Introduction on the concept of digital storytelling (using PowerPoint): what are the principles of storytelling, how to write an effective story on internet, what is the role of technology (tablets, internet);
- Discussion on the overall aim and objectives of the intervention: what stories to tell, how to collect stories, how to upload them on internet;
- Hands on the technology: opportunity to explore the tablet, its interface and functionalities;
- Presentation of the anticipated expectations and benefits for each participant (Danley & Ellison 1999) and formalisation of the collaboration between the participants and the main researcher;
- Signature of a written agreement between each participant and the main researcher.